U. S. DEPARTMENT OF LABOR
CHILDREN'S BUREAU
JULIA C. LATHROP, Chief

MATERNAL MORTALITY

FROM ALL CONDITIONS CONNECTED WITH CHILDBIRTH

IN THE UNITED STATES AND CERTAIN OTHER COUNTRIES

BY
GRACE L. MEIGS, M. D.

MISCELLANEOUS SERIES No. 6
Bureau Publication No. 19

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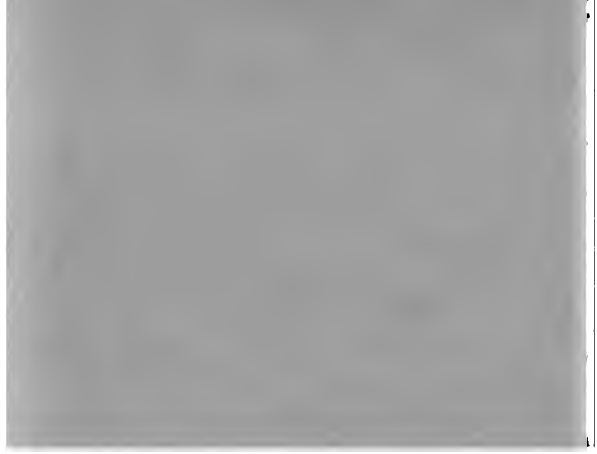

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, September 25, 1916.

SIR: I transmit herewith a report entitled "Maternal Mortality from all Conditions Connected with Childbirth in the United States and Certain Other Countries," by Dr. Grace L. Meigs, in charge of the hygiene division of this bureau. This report has been prepared because the bureau's studies of infant mortality in towns and rural districts reveal a connection between maternal and infant welfare so close that it becomes plain that infancy can not be protected without the protection of maternity.

In this study Dr. Meigs undertakes to do no more than to assemble and interpret figures already published by the United States Bureau of the Census and by the statistical authorities of various foreign countries, and to state accepted scientific views as to the proper care of maternity. She points out clearly that maternal mortality is in great measure preventable, that no available figures show a decrease in the United States in recent years, and that certain other countries now exhibit more favorable rates. This report reveals an unconscious neglect due to age-long ignorance and fatalism. It is earnestly believed that whenever the public realizes the facts it will awake to action and that adequate provision for maternal and infant welfare will become an integral part of all plans for public health protection.

The generous assistance of the United States Bureau of the Census in the preparation of this report is gratefully acknowledged.

Dr. Meigs desires that special mention be made of the assistance of Miss Emma Duke, head of the statistical division of the Children's Bureau, and of Miss Viola Paradise, research assistant in the division of hygiene.

Respectfully submitted.

JULIA C. LATHROP,
Chief of Bureau.

Hon. WILLIAM B. WILSON,
Secretary of Labor.

MATERNAL MORTALITY FROM ALL CONDITIONS CONNECTED WITH CHILDBIRTH.

SUMMARY.

In 1913 in this country at least 15,000 women, it is estimated, died from conditions caused by childbirth; about 7,000 of these died from childbed fever, a disease proved to be almost entirely preventable, and the remaining 8,000 from diseases now known to be to a great extent preventable or curable. Physicians and statisticians agree that these figures are a great underestimate.

In 1913 the death rate per 100,000 population from all conditions caused by childbirth was little lower than that from typhoid fever; this rate would be almost quadrupled if only the group of the population which can be affected, women of childbearing age, were considered.

In 1913 childbirth caused more deaths among women 15 to 44 years old than any disease except tuberculosis.

The death rate due to this cause is almost twice as high in the colored as in the white population.

Only 2 of a group of 15 important foreign countries show higher rates from this cause than the rate in the registration area of the United States. The rates of 3 countries, Sweden, Norway, and Italy, which are notably low, show that low rates for these diseases are attainable.

The death rates from childbirth and from childbed fever for the registration area of this country apparently are not falling to any great extent; during the 13 years from 1900 to 1913 they have shown no demonstrable decrease. These years have been marked by a revolution in the control of certain other preventable diseases, such as typhoid, diphtheria, and tuberculosis. During that time the typhoid rate has been cut in half, the rate from tuberculosis markedly reduced, and the rate from diphtheria reduced to less than one-half. During this period there has been a decrease in the death rate from childbirth per 1,000 live births in England and Wales, Ireland, Japan, New Zealand, and Switzerland.

These facts point to the need in this country and in foreign countries of higher standards of care for women at the time of childbirth.

The low standards at present existing in this country result chiefly from two causes: (1) General ignorance of the dangers connected

with childbirth and of the need for proper hygiene and skilled care in order to prevent them; (2) difficulty in the provision of adequate care due to special problems characteristic of this country. Such problems vary greatly in the city and in the rural districts. In the country inaccessibility of any skilled care is a chief factor.

Improvement will come about only through a general realization of the necessity for better care at childbirth. If women demand better care, physicians will provide it, medical colleges will furnish better training in obstetrics, and communities will realize the vital importance of community measures to insure good care for all classes of women.

PART I. GENERAL DISCUSSION.

STATISTICS RELATING TO CHILDBIRTH IN THE UNITED STATES AND IN CERTAIN FOREIGN COUNTRIES.

Introduction.

For the last two decades civilized countries have been absorbed in the problem of preventing the enormous and needless waste of human life represented by their infant death rates. The importance of this problem has been felt more keenly in the last two years in the countries now at war; in these countries the efforts toward saving the lives of babies have redoubled since the war began. Side by side with this problem, another, which is only of late finding its true place, is that of the protection of the lives and health of mothers during their pregnancy and confinement. This is a question so closely bound up with that of the prevention of infant mortality that the two can not be separated.

It is now realized that a large proportion of the deaths of babies occur in the first days and weeks of life, and that these deaths can be prevented only through proper care of the mother before and at the birth of her baby. It is also realized that breast feeding through the greater part of the first year of the baby's life is the chief protection from all diseases; and that mothers are much more likely to be able to nurse their babies successfully if they receive proper care before, at, and after childbirth. Moreover, in the progress of work for the prevention of infant mortality it has become ever clearer that all such work is useful only in so far as it helps the mother to care better for her baby. It must be plain, then, to what a degree the sickness or death of the mother lessens the chances of the baby for life and health.

This question has also another side. Each death at childbirth is a serious loss to the country. The women who die from this cause are lost at the time of their greatest usefulness to the State and to their families; and they give their lives in carrying out a function which must be regarded as the most important in the world.

Questions then of the most vital interest to the whole Nation are these: How are the lives of the mothers in this country and other countries being protected? To what degree are the diseases caused by pregnancy and childbirth preventable? If preventable, how far are they being prevented in this country? Has there been the same great decrease in the last few years in sickness and death from these causes as that which has marked the great campaigns against

other preventable diseases such as typhoid, tuberculosis, or diphtheria? How do the conditions in the United States compare with those in other countries?

In the following report the attempt has been made to derive answers to these questions from the official records of this country and of foreign countries.

Are the diseases caused by pregnancy and confinement preventable diseases?

These diseases [1] fall naturally into two groups, which differ considerably as to the degree to which they are preventable:

1. Childbed fever, or puerperal septicemia (an infection arising in connection with miscarriage or confinement), which is to a great degree a preventable disease.

2. All other diseases and complications caused by pregnancy and confinement, including conditions varying very much in the degree to which they can be prevented or cured.

Puerperal septicemia (childbed fever).—The fact is now well known that puerperal septicemia, or childbed fever, is in reality a wound infection, similar to such an infection after an accident or an operation, and that it can be prevented by the same measures of cleanliness and asepsis which are used so universally in modern surgery to prevent infection. The proof of the nature of this disease is one of the tremendous results of the scientific discoveries which were made in the latter part of the nineteenth century.

During the early part of that century childbed fever was one of the greatest hospital scourges known. It occurred also in private practice; but in hospitals where there was great opportunity for the spreading of infection the death rate from this disease was appalling. The average death rate in hospitals in all countries was 3 to 4 per cent of all women confined; sometimes it reached 10 to 20 per cent and even over 50 per cent during short periods of epidemics.[2] In the face of this terrific mortality many obstetrical hospitals were closed. Commissions were appointed to investigate the cause of these epidemics, and medical congresses devoted sessions to the discussion of the problem. In 1843 Oliver Wendell Holmes, and in 1847 Semmelweiss, published articles stating the theory that this fever was similar to a wound infection and was due chiefly to the carrying of infectious material on the hands of attendants from one case to another. The

[1] Throughout this report when reference is made to causes of death the term "childbirth" will be used as synonymous with "all diseases caused by pregnancy and confinement"; and each of these terms will be used as being the sum of the two groups, "puerperal septicemia" and "all other diseases caused by pregnancy and confinement." It will be noted that diseases of the breast during lactation are included in the latter group. For a fuller discussion of these causes of death, and the titles of the International List of Causes of Death to which they correspond, see p. 29.

[2] Williams, J. W. "Obstetrics and animal experimentation." Defense of Research Pamphlet XVIII, Amer. Med. Assn., Chicago, 1911, pp. 5–19.

same ideas had been published much earlier but had not received attention.

At the time of the publications of Holmes and Semmelweiss it was not known that the infection of wounds is caused by the action of bacteria or germs. This discovery followed the pioneer discovery of living bacteria causing fermentation, made by Pasteur about 1863, which has revolutionized all surgery and preventive medicine.

In 1867 Lister began to apply to surgery the work of Pasteur; he taught that wound infection at operation could be prevented by the destruction of bacteria through disinfection or antisepsis. Though these methods have been supplemented in later years by the better methods of absolute surgical cleanliness or asepsis, they represented at that time a great advance.

About 1875 Lister's methods began to be generally accepted and applied in hospitals to the prevention of infection at childbirth. This movement gained great support in 1879 when Pasteur proved definitely that childbed fever is caused by bacteria.

Gradually the methods of antisepsis or disinfection and later the better methods of asepsis were accepted in obstetrical hospitals; and at the same time the mortality, once so high, dropped enormously. At present the death rate from puerperal septicemia among cases delivered in hospitals is extremely low. Williams says: "At the present time it is safe to say that in well-regulated hospitals the mortality from puerperal infection is less than 0.25 per cent. This is in great contrast with the average mortality of 3 to 4 per cent observed [in hospitals] throughout the world prior to the introduction of antiseptic methods, and means that only 1 woman now dies as compared with 15 or 20 formerly."[1]

This experience in hospitals has proved definitely that puerperal septicemia is to a very large degree preventable. One fact, however, complicates the whole question and makes it impossible to say that the disease is in all cases absolutely preventable, namely, that a very small number of cases develops even under conditions of the best hospital or private care, when every method for avoiding infection has been used. This fact has led to much controversy. In general obstetricians of the greatest experience believe that a small number of cases of infection after childbirth may develop from bacteria which were already in the body of the patient before confinement; but that in the main such cases are of mild severity and that only a few fatal cases are due to this cause. Another point which must be borne in mind is that, in a certain number of cases, women may infect themselves through improper hygiene during pregnancy or just before or at confinement. Therefore the teaching of proper hygiene is an essential part of the work for the prevention of infection.

[1] Williams, J. W. Supra cit., p. 19.

To sum up, experience has shown that by far the major part of all serious cases of infection at childbirth may be prevented by the application of such principles of hygiene and of strict surgical cleanliness as are now established beyond question.

All other diseases caused by pregnancy and confinement.—The diseases and complications included under this heading are those given on page 30 as being included under "Other puerperal accidents of pregnancy and labor."

A definite statement such as that made above regarding the preventability of puerperal septicemia can not be made about this second group of diseases, which includes many different conditions. However, it is a fact well proved in practice that a large number of these complications can be prevented through proper hygiene and supervision during pregnancy and through skilled care at labor. Certain other complications which can not be prevented can be detected before serious harm is done, and treatment can be given which will save the mother's life. We can see this more clearly if we consider as examples two of the most important complications.

Puerperal albuminuria and convulsions, called also eclampsia, or toxemia of pregnancy, is a disease which occurs most frequently during pregnancy but may occur at or following confinement. It is a relatively frequent complication among women bearing their first children. When fully established its chief symptoms are convulsions and unconsciousness. In the early stages of the disease the symptoms are slight puffiness of the face, hands, and feet; headache; albumen in the urine; and usually a rise in blood pressure. Very often proper treatment and diet at the beginning of such early symptoms may prevent the development of the disease; but in many cases where the disease is well established before the physician is consulted, the woman and baby can not be saved by any treatment. In the prevention of deaths from this cause it is essential, therefore, that each woman, especially each woman bearing her first child, should know what she can do, by proper hygiene and diet, to prevent the disease; that she should know the meaning of these early symptoms if they arise, so that she may seek at once the advice of her doctor; and that she should have regular supervision during pregnancy, with examination of the urine at intervals.

Some obstruction to labor in the small size or abnormal shape of the pelvic canal causes many deaths of mothers included in the class "other accidents of labor" and also many stillbirths. If such difficulty is discovered before labor, proper treatment will in almost all cases insure the life of mother and child; if it is not discovered until labor has begun, or perhaps until it has continued for many hours, the danger to both is greatly increased. Every woman, therefore, should have during pregnancy—and above all during her first preg-

nancy—an examination in which measurements are made to enable the physician to judge whether or not there will be any obstruction to labor. A case in which a complication of this kind is found requires the greatest skill and experience in treatment,[1] but with such treatment the life and health of the mother are almost always safe.

These two examples will suffice. In the same way it could be shown, with regard to all the other complications of pregnancy and labor, that those which can not be prevented can be treated successfully in most cases if detected in time.

It can be regarded, then, as a generally accepted fact that all illness and death connected with childbearing is, to a certain and large degree, preventable, through the application of the scientific knowledge which is now well established. The next questions are, How far are these diseases being prevented in the United States? How many deaths do they cause each year? What are the death rates from these causes, and are they decreasing or increasing? The statistics gathered by the United States Bureau of the Census have been studied for answers to these questions.

There are other equally important questions to which these figures will not give answers. In addition to the number of deaths and death rates, it is important to know how much illness is caused by the diseases of pregnancy and confinement. How many women do they disable for months or years? Undoubtedly the health of these mothers affects enormously the welfare of their children. Unfortunately such questions can not be answered; puerperal septicemia is not a reportable disease in this country as it is in many others. We can only remember that for each woman who died there are surely many who were ill for days, weeks, or months, but who finally recovered.

The following pages give a brief summary of the data, published by the United States Bureau of the Census, dealing with deaths from childbirth. These are discussed in further detail in other sections of the report.

Reliability of data.

The statement is frequently made that all statistics on this subject are incomplete. This is undoubtedly true with regard to the figures available in each country. A detailed discussion of the many sources of error in the statistics of the United States and of foreign countries on this subject will be found in another section, beginning on page 34.

[1] The public must be taught that the conduct of labor complicated by a moderate degree of pelvic contraction is quite as serious as a case of appendicitis, and that its proper management requires the highest degree of judgment and skill, while eclampsia or placenta prævia are even more serious.—Williams, J. W. "The midwife problem and medical education in the United States." Trans. Amer. Assn. for Study and Prevention of Infant Mortality, 1911, p. 189.

From that discussion several conclusions may be drawn:

1. Though the figures of the number of deaths from puerperal septicemia and from all other diseases connected with childbirth are certainly incomplete, yet they are reliable as far as they go; they may be accepted as a statement of the minimum number of deaths which have actually occurred as a result of these diseases.

2. All conclusions as to comparative death rates in various years and in various countries can be made only with caution and by bearing in mind the many statistical pitfalls connected with such comparisons.

With a full understanding of the limitations of the figures available, it has seemed worth while to publish the following figures of the deaths in the United States due to childbirth.

Number of deaths in the United States from childbirth.

In 1913 in the "death-registration area" [1] of the United States 10,010 deaths were reported as due to conditions caused by pregnancy and childbirth. Of these deaths, 4,542 were reported as caused by puerperal septicemia or childbed fever.

Using the death-registration area as a basis, we are justified in estimating that in 1913 in the whole United States 15,376 deaths were due to childbirth, and 6,977 of these were due to childbed fever. As will be shown later, these figures are without doubt a gross underestimate. As it is, they are striking enough—almost 7,000 deaths in one year in this country due to childbed fever, a disease to a large degree easily preventable; and over 8,000 due to the other diseases caused by pregnancy and confinement, most of which are preventable or curable by means well known to science.

Death rates in the United States from childbirth.

The death rate from all diseases caused by pregnancy and confinement in 1913 in the registration area was 15.8 per 100,000 population (which includes all ages and both sexes). The death rate from puerperal septicemia was 7.2.

These figures, however, mean little to us unless we compare them with the death rates from other preventable diseases. In the same year and area the typhoid rate was 17.9 per 100,000 population; the rate from diphtheria and croup 18.8. The highest death rate from any one disease was that from tuberculosis, 147.6 per 100,000 population. Any such comparison with the rates from diseases to which both sexes and all ages are liable is of course very misleading; but in spite of that fact it is interesting to note that typhoid fever, the disease

[1] The death-registration area comprises the States and cities in which the registration of deaths is returned as fairly complete.—U. S. Census. Mortality Statistics, 1911, p. 9. It is estimated that in 1913 the death-registration area included 65.1 per cent of the population of the United States. (See Table I, p. 49.)

against which so great an amount of effort is now directed, has a rate at present but 2 per 100,000 population higher than that from the diseases caused by pregnancy and confinement.

Death rates per 100,000 women.—The death rates from childbirth are approximately doubled when worked on the basis of 100,000 women. This will be seen when Tables IV and III (p. 50) are compared. The former gives for the period 1900 to 1910, the annual death rates per 100,000 women in the group of 11 States which were in the death-registration area in 1900, the latter the death rates per 100,000 population in the same group of States for the same period. It is evident that the rates in Table IV for each year are slightly more than twice those in Table III for the same year.

Death rates per 100,000 women of childbearing age.—Again, a much higher but a more accurate death rate from these diseases is found when the basis taken is the group which alone is affected by these diseases—women of childbearing age. When the rate is based not upon 100,000 population of both sexes and all ages but upon 100,000 women 15 to 44 years of age, the rate as ordinarily given is multiplied several times.

In 1900,[1] the only year for which the rates can be computed, the death rate in the registration area per 100,000 women 15 to 44 years of age from all diseases of pregnancy and confinement was 50.3; from puerperal infection, 21.6. (See p. 32.) The corresponding rates for the same year per 100,000 population were 13.1 and 5.6. In this year, therefore, the rates are almost quadrupled when based on that group of the population which alone can be affected by these diseases.

Moreover, the death rates as ordinarily given per 100,000 population conceal the fact that the diseases of pregnancy and childbirth are indeed among the most important causes of death of women between 15 and 44 years of age; the actual number of deaths shows this to be the case. In 1913 in the registration area these diseases caused more deaths than any other one cause of death except tuberculosis. In that year there were, among women 15 to 44 years of age, 26,265 deaths from tuberculosis; 9,876 deaths from the diseases of pregnancy and confinement; 6,386 from heart disease; 5,741 from acute nephritis and Bright's disease; 5,065 from cancer; and 4,167 from pneumonia. Other diseases, such as typhoid, appendicitis, and the infectious diseases show far fewer deaths. (See Table V, p. 51.)

Death rates per 1,000 live births.—This rate, as will be shown repeatedly throughout the report (see p. 32), gives a far clearer picture of the actual risk of childbirth than do any of the rates so far considered. This rate can be given only for one year, 1910, and only for the provisional birth-registration area for that year. The rate from all diseases caused by pregnancy and confinement is 6.5, from puer-

[1] Census year ending May 31.

peral septicemia, 2.9, and from all other diseases of pregnancy and confinement, 3.6 per 1,000 live births. That is, in this area for every 154 babies born alive one mother lost her life. (See Table VI, p. 52.)

Is the death rate from childbirth falling?

Has there been in the last few years any decrease in the death rates from puerperal septicemia and from other diseases caused by pregnancy and confinement? The general opinion of the medical profession and of the laity is that these death rates, and especially the rate from puerperal septicemia, are fast decreasing. The fact that hospital epidemics of puerperal septicemia are now things of the past is thought to be evidence that deaths from this disease are now rare. On the other hand, many obstetricians of wide experience believe that outside of hospitals there has been no great decrease in the death rate from puerperal septicemia.

Dr. Williams,[1] professor of obstetrics, Johns Hopkins University, believes that there has been no great improvement in this country; Dr. Webster,[2] professor of obstetrics, Rush Medical College, University of Chicago, and Dr. Powell[3] hold the same opinion; Dr. De Lee,[4] professor

[1] In private practice it is doubtful whether the results are materially better to-day than they were before the introduction of antiseptic methods, for the reason that the doctrines of asepsis have not yet permeated the rank and file of medical men, much less of midwives, to whose care is committed a very large proportion of obstetrical cases. Though, at the same time, it must be admitted that we rarely hear of outbreaks of puerperal infection such as are mentioned in the historical work of Hirsch, who gives the particulars of 216 epidemics occurring between the years 1652 and 1862.

Boehr stated in 1875 that 363,324 women had died from puerperal infection in Prussia during the preceding 60 years, and calculated that every thirtieth married woman eventually perished from it; while Ehlers contended that outside of the well-regulated hospitals the results were equally bad in 1900. Furthermore, Fromme stated, in 1910, that at least 5,000 women succumb each year in Prussia to this preventable malady.

Bacon, in an article based upon the records of the health department of Chicago, showed that for the 40 years prior to 1896 puerperal infection was assigned as the cause of death in 12.75 per cent of the women dying between the ages of 20 and 50 years, varying between 20 per cent in 1873 and 7.3 per cent in 1895. Similar results were reported by Ingerslev, who stated that, even at the present time in Denmark, with the single exception of tuberculosis, puerperal infection is the most frequent cause of death in women during the childbearing period.

The investigations of Boxall, Byers, and Lea show a similar condition in England, where it may be said that outside of the lying-in hospitals this preventable scourge claims as many and perhaps more victims than it did 20 or even 40 years ago.

Moreover, in trying to determine the frequency of puerperal infection, one can not be guided altogether by the mortality statistics, inasmuch as the largest proportion of these cases do not end fatally. On the other hand, anyone who deals much with gynecological patients can not fail to be impressed with the very large proportion whose troubles have originated from febrile affections during the puerperium, which in many instances were clearly due to the neglect of aseptic precautions on the part of the obstetrician or midwife.—Williams, J. W. Obstetrics, 1913, pp. 900, 901.

[2] It is the general impression that there has been a marked diminution in the mortality of puerperal sepsis since the introduction of antiseptics. This is probably true only as regards hospital practice. * * * As regards private practice, it is doubtful if there has been much diminution in mortality, either in Europe or America.—Webster, J. C. A Text-book of Obstetrics, 1903, p. 640.

[3] I am quite sure it is the belief of all who have given attention to this subject, that the mortality from puerperal infection has been diminished little if any in private practice.—Powell, H. H. "Mortality from puerperal infection." Surgery, Gynecology and Obstetrics, 1906, Vol. III, p. 11.

[4] I do not fear to hazard the statement that 8,000 women die annually in the United States from childbed infections. When one considers that the majority of cases of puerperal infection get well, the conclusion is inevitable that the disease is still—in these modern aseptic and antiseptic times—very prevalent.—De Lee, J. B. Principles and Practice of Obstetrics, 1913, p. 870.

of obstetrics, Northwestern University, comments on the great prevalence of puerperal septicemia in spite of our present knowledge of asepsis. Dr. Moran[1] points out the lack of decrease in the figures as given in the census reports, as does also Dr. Davis[2] in a recent volume. Dr. Edgar,[3] professor of obstetrics and clinical midwifery, Cornell University Medical College, on the other hand, believes that there has been a decrease.

We need a definite answer to this question, based on a study of unassailable statistics. Unfortunately the available figures on this subject for this country and foreign countries have many possibilities of error, as will be shown in a later section (see p. 34). The errors have been avoided as far as possible; those which can not be avoided must be considered in reading the following summary. Especially to be remembered is the fact that in recent years great improvement has been made in the registration of deaths from childbirth and childbed fever.

According to the evidence available, these death rates are apparently not decreasing. During the 23 years ending in 1913 in this country no definite decrease in the death rate from the diseases caused by pregnancy and confinement can be demonstrated; nor can any decrease in the death rate from puerperal septicemia be shown.

In the registration area as a whole the death rates have shown no decline in the years between 1890 and 1913. The death rate from all diseases caused by pregnancy and confinement, which was 15.3 in 1890, fell to 13 in 1902, and then with annual fluctuations rose to 16 in 1911; in 1913 the rate was 15.8. The annual average for the period 1901 to 1905 was 14.2; for the period 1906 to 1910, 15.5. (See Table I, p. 49.)

The death rate from all diseases caused by pregnancy and confinement for the group of eight States which have been included in the death-registration area from 1890 to 1913[4] also has shown no decrease during the course of these 23 years. There was a slight fall in the rate for the year 1900 as compared with that for the year 1890, followed by a slight rise. (See Table II, p. 49.) In 1890 the rate was 14.1 per 100,000 population; in 1900, 12.6; in 1913 it was 14.3.

The death rates for a second group of States[4] (those included in the death-registration area since 1900) show between 1900 and 1913 a

[1] Moran, J. F. "The endowment of motherhood," Jour. Amer. Med. Assn., 1915, Vol. LXIV, p. 122.

[2] It is probable that very few physicians realize that with the great progress of preventive medicine and aseptic surgery that there has not been a similar increase in the safety of maternity.—Davis, C. H. Painless Childbirth, Eutocia, and Nitrous Oxid-Oxygen Analgesia, 1916, p. 62.

[3] It is very difficult to estimate the frequency of puerperal infection outside of hospitals * * * but it is undoubtedly much less than it used to be.—Edgar, J. C. The Practice of Obstetrics, 1903, p. 752.

[4] Selected for study because good methods of death registration may be assumed to have become established, and also because comparisons of the rates of such a group of States are not open to the error due to the changing character of the registration area.

slight increase, from 12.9 to 14.9, with the high point 15.5 in 1911. (See Table III, p. 50). These rates are more fully discussed on page 38.

The death rates from puerperal septicemia or childbed fever during these years in each group of States have run parallel with those from the whole group of diseases connected with childbirth; they, too, have shown practically no change in 13 years.

It is probable that the improvement in reporting deaths from childbirth may account for the apparent rise in the rates since 1900; it may also perhaps conceal a slight improvement in actual conditions since that time; but it is safe to say that any marked decrease in the actual death rate from childbirth during the last 13 years could not have been masked by this error.

In these years what has been the change in the death rates from other preventable diseases? These death rates tell a very different story from that of the rates from childbirth. They give a bare outline of the remarkable achievements of modern medicine in the prevention of certain diseases.

DIAGRAM I.—DEATH RATES PER 100,000 POPULATION FROM TYPHOID, DIPHTHERIA AND CROUP, AND DISEASES CAUSED BY PREGNANCY AND CONFINEMENT IN THE DEATH-REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1913.

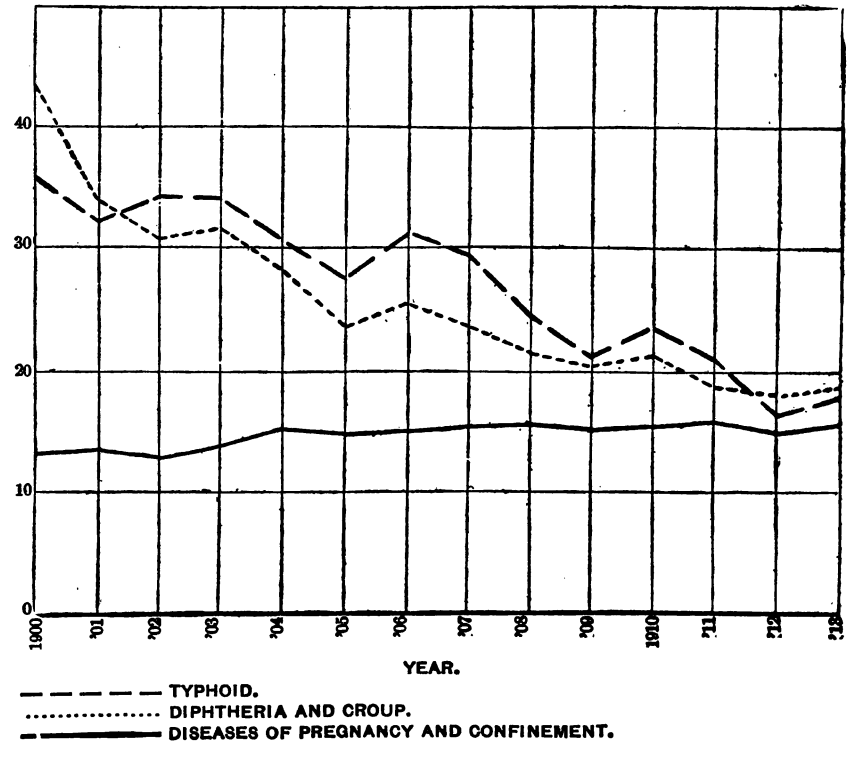
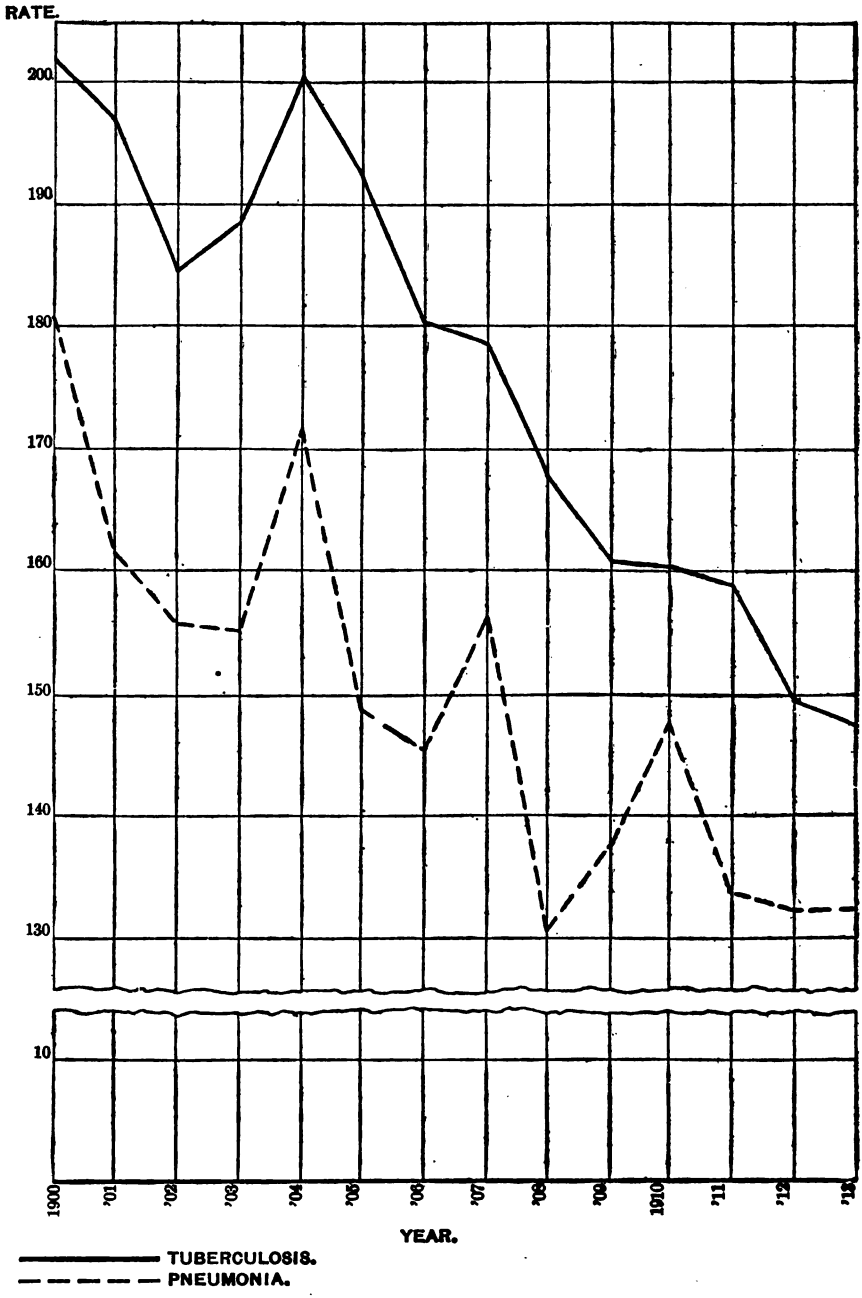


DIAGRAM 2.—DEATH RATES PER 100,000 POPULATION FROM TUBERCULOSIS AND PNEUMONIA IN THE DEATH-REGISTRATION AREA OF THE UNITED STATES, 1900 TO 1913.



Between 1890 and 1913 the death rate from typhoid fever in the death-registration area fell from 46.3 to 17.9; that from diphtheria and croup from 97.8 to 18.8; from tuberculosis from 252 to 147.6; from pneumonia from 186.9 to 132.4; from diarrhea and enteritis under 2 years from 139.1 to 75.2. (See Table VII, p. 53.)

If we consider only the 13 years since 1900, for which we have annual reports, the changes are just as startling. In that time the death rate from typhoid fever has been cut in half; that from diphtheria and croup has dropped to less than half; those from tuberculosis and pneumonia have both shown a marked fall. These changes, together with the lack of change in the death rates from the diseases caused by pregnancy and childbirth, are shown graphically in diagrams 1 and 2.

Death rates from childbirth in urban and rural districts.

Besides the questions applying to the death rates of the country as a whole, there are further questions which it would be interesting to answer from the data given by official figures. Is the rate higher in the cities than in rural districts? Does a comparison of the rates of different sections of the country reveal any significant facts? Is there any difference in rate among different groups of the population?

No figures,[1] unfortunately, are available for the death rates from these diseases in what is generally understood as the rural portion of this country; that is, among the population scattered in districts outside of even the smallest towns and cities. In view of the fact that standards of obstetrical and prenatal care differ so widely in these rural districts from those in large cities a comparison of the rates would have been extremely significant.

The death rates for the group of cities of 8,000 [2] or more inhabitants in the registration States [3] have been studied, as contrasted with the death rates of the smaller cities, towns, and rural districts classed together. The rates in each year are higher for the larger cities of the registration States than for the smaller cities and rural districts. (See Table VIII, p. 53.) Part of this difference may be due to greater incompleteness of the returns from the second group. Further than this, many factors may be involved in the higher rate in the larger

[1] In the publications of the Bureau of the Census on Mortality Statistics figures are given for the population classified into urban and rural or of cities and rural districts. For the years 1900 to 1909 urban is defined as including the population of all cities of 8,000 or more inhabitants at the census of 1900; rural as including that of all cities and towns of less than 8,000 inhabitants, as well as of the districts outside of any cities, towns, or villages. For the years 1910 to 1913 the division is made between cities having a population of 10,000 or more in 1910 and those cities having less than 10,000 inhabitants, together with rural districts.

[2] Ten thousand inhabitants, 1910 to 1913.

[3] It has been thought better to compare the urban and rural rates in the group of registration States in each year rather than to compare these rates for the whole registration area as constituted in each year. As the registration area includes cities in several States of which the smaller towns and rural districts are not included, the latter comparison would seem to be scarcely fair.

cities. While some of the larger cities afford better provision for obstetrical and prenatal care than do the smaller cities and rural districts, this is not true of all; moreover, the larger cities probably show a much higher rate among the less favored than among the more favored groups of their inhabitants. Overcrowding, overwork, low incomes, ignorance of the need for good obstetrical care and how it can be obtained may all play their part in producing this high rate in the larger cities.

The figures do not show a decrease in the death rates from childbirth in the larger cities in recent years. The death rates of the whole group of cities of 8,000 [1] or more inhabitants in the registration States for the years 1900 to 1913 (see Table VIII, p. 53) show no decline. The rate in 1900 was 14.9; in 1913, 17.2.

The rates from childbirth for the same period in a group of 7 large cities have been studied. (See Table IX, p. 54.)

The rates for New York City alone show a definite and steady decline; in 1905 the rate per 100,000 inhabitants was 20.3; in 1913, 14.1.

The rates of Boston, Buffalo, Detroit, Jersey City, and Washington show wide annual fluctuations, but no general tendency to increase or decrease. The rate of Newark, on the other hand, shows an increase.

Death rates from childbirth in different States.

The death rates of only 11 States (including the District of Columbia) can be studied through a period of time (1900 to 1913) long enough to justify any conclusions. These States, unfortunately, do not represent any widely different sections of the country, as they include only the New England States, two Middle Atlantic States (New York and New Jersey), the District of Columbia, and two North Central States (Indiana and Michigan). The western and southern sections of the country are unrepresented.

Though the rates for each State vary considerably from year to year, it will be noted that certain States show high average rates; among these are the District of Columbia, Michigan, and Rhode Island, whose rates are 17.6, 17.1, and 16.8, respectively. (See Table X, p. 54.) Other States show comparatively low average rates; for example, New Hampshire (11.2) and Maine (11.8). It seems premature at this time to draw any conclusions as to the cause of these differences in rates in different States. When the rates are available for all sections of the country, a comparison of rates for different large sections presenting similar problems will be very useful.

[1] Ten thousand inhabitants, 1910 to 1913.

Death rates from childbirth of white and colored population.

No facts brought out in this study are as striking as the difference in rates from childbirth of the white and colored population of the death-registration area. In some cases the rates for the colored population are almost double those for the white. Table XI, page 56, which gives the rates so divided, demonstrates this difference. In 1913 the death rate from all diseases caused by pregnancy and confinement was 15.2 per 100,000 white population and 26.1 per 100,000 colored. In the same year the rate from puerperal septicemia was 6.9 for the white population and 11.5 for the colored. A similar relation is shown by the rates for each year from 1910 to 1913. Although the rates can be given only for four years, and are based on small figures, yet they show differences so marked that they picture without doubt a very great difference in standards of care at childbirth in these two groups. When all the Southern States are included in the death-registration area the magnitude of this problem undoubtedly will be shown by the death rates from childbirth in these States. At present but a small percentage of the colored population of the United States is represented by the figures available.

Comparison of the average death rates from childbirth in certain foreign countries and in the United States.

Are the death rates from these diseases in the death-registration area of the United States higher or lower than those in other civilized countries? Have these rates in other countries been falling or rising in the last 13 years, while the rates of this country have been apparently stationary? These questions, like all those of comparative international statistics, are of immense interest, but they involve many difficulties and sources of error. These are discussed on page 41. They should be considered in reading the following summary.

In order to make possible a comparison of the death rates from these causes for 15 foreign countries with those for the United States, an average rate has been computed for the years 1900 to 1910 [1] for each of the countries, using the same method as that in use in the United States. When the 16 countries studied are arranged in order, with the one having the lowest rate first, the death-registration area of the United States stands fourteenth on the list. (See Table XII, p. 56.) Only two countries, Switzerland and Spain, have higher rates; many of the countries, however, show rates differing but little from that of the United States. Markedly low rates are those of Sweden (6), Norway (7.8), and Italy (8.9); a strikingly high rate is that of Spain (19.6).

The death rate from childbirth per 1,000 live births is not available for the death-registration area of the United States, but can be given

[1] Or for that portion of this period for which figures are available.

only for the small number of States and cities included in the provisional birth-registration area and for one year, 1910. (See p. 31.) This rate, 6.5, is considerably higher than that for 1910 of any of the countries studied. When the average rates for a number of years of the 15 countries are reckoned per 1,000 live births and arranged in order, it will be seen that the same group of countries—Sweden, Italy, and Norway—shows the lowest rates. (See Table XIII, p. 56.) Spain in this table shows the rate which is next to the highest, while Belgium now has the highest rate. For a comparative study of the rates of these countries the rates per 1,000 live births give undoubtedly the clearest picture of the actual conditions.

These rates show a wide variation. While in Sweden but one mother is lost for every 430 babies born alive, in Belgium one mother dies for every 172 babies, and in Spain one for every 175 babies born alive. The rates in Belgium and Spain are two and a half times as high as the rate in Sweden.

Far more significant than a comparison of actual death rates of various countries is a comparison of the changes which have occurred in these death rates in each country in recent years. England and Wales, Ireland, Japan, New Zealand, and Switzerland have shown a decrease in the death rate per 1,000 live births from all diseases caused by pregnancy and confinement; but, in this group, only in England and Wales and in Ireland has the death rate from puerperal septicemia decreased; in the other three countries this rate has remained practically the same, though the total rate has decreased.

In Australia, Belgium, Hungary, Italy, Norway, Prussia, Spain, and Sweden both the rate from childbirth and that from puerperal septicemia remained almost stationary during the periods studied.

The total rate for Scotland shows a definite increase, though the rate from puerperal septicemia has decreased. (See Table XVI, p. 66.)

Conclusions.

In the foregoing pages the attempt has been made to draw, from available statistics, answers to certain important and urgent questions relating to the hazards of childbirth in this country and in other countries. It has been shown that a large number of women die year after year in this country from childbed fever, a disease proved over 40 years ago to be almost entirely preventable; and that a still larger number die from other conditions connected with childbirth which are known to be to a large degree preventable or curable. The proportionately small number of women lost from these causes in certain foreign countries demonstrates the needlessness of the greater part of our losses. There is no evidence, moreover, of any great advance made during the last 13 years in this country in the prevention of disease and death due to childbirth, though the

same period has been marked by a notable decrease in the death rates of certain other diseases which have been proved preventable.

What is the cause of these conditions in this country? At the root of the matter, apparently, lie two chief causes: First, general ignorance of the dangers connected with childbirth and the need of skilled care and proper hygiene in order to prevent them; second, such difficulties related to the provision of proper obstetrical care as are characteristic of conditions in this country.

A general realization of certain of the fundamental facts related to the bearing of children has only begun; this function has always been looked upon with a mixture of ignorance and fatalism. The hazards to health and life connected with childbirth have been either ignored or accepted as unavoidable accidents. By most people childbirth is regarded as an entirely normal process, and, happily, in the great majority of cases this is true. But the figures given in this report show that it is not true of all. Each year there is a vast number of normal deliveries, and among them the relatively small but absolutely very large number of complicated cases is lost sight of. On the other hand, most people regard such illness and deaths as do occur as unpreventable. Only very gradually and incompletely are women beginning to realize the simple facts that certain accidents and complications occur in a definite percentage of cases of childbirth, but that almost always these may be avoided or cured if women exercise the proper hygiene during pregnancy, secure proper supervision during that time, and have skilled attendance at labor. Like other essentials of hygiene and preventive medicine these principles are at last becoming public property instead of being the exclusive possession of physicians. But in this case progress has been very slow. Knowledge of the need for good care at childbirth is essential; the lack of such knowledge and of a demand for this care has been, probably, the chief factor in producing the present indifference to this phase of preventive medicine.

The husbands of women bearing children do not realize that money paid for skilled service at childbirth is one of the most necessary family expenditures; hence, obstetrics has become one of the worst paid though one of the most taxing branches of medicine. Dr. Williams [1] speaks of the small fees usually paid for maternity care and says that "doctors who are obliged to live from their practice can not reasonably be expected to give much better service than they are paid for." Naturally enough, the lack of interest of physicians in obstetrics is partly due to this fact. No doubt another reason why many able physicians dislike this branch of practice is the fact that they feel strongly the responsibility assumed in the care of

[1] Williams, J. W. "The midwife problem and medical education in the United States." Trans. Amer. Assn. for Study and Prevention of Infant Mortality, 1911, p. 190.

women at childbirth; yet they are frequently called upon to take this responsibility in the face of conditions which they can not control and which threaten the safety of their patients. A conscientious physician does not willingly undertake the conduct of a difficult case of labor outside a hospital and without skilled assistance; but frequently he must do so, either because there is no hospital or trained nurse available, or because the patient and her family are unable or unwilling to pay for the needed help. The physician either must give up the case to an attendant who is less skillful and careful than himself or must take the risk that puerperal septicemia or some other complication may occur. If either follows he has the blame. Altogether a physician has little incentive to specialize and acquire great skill in this branch.

Necessarily the same apparent indifference to the importance of obstetrics is reflected in the courses of many medical colleges. Dr. Williams[1] pointed out in 1911 that in the majority of medical colleges in the United States instruction in this subject was grossly neglected; that graduates from these colleges beginning their practice were totally unprepared to manage any but absolutely normal cases of confinement, and that they were untrained in the practice of the principles of asepsis as applied to this branch. Other papers and discussions in the Transactions of the American Association for Study and Prevention of Infant Mortality have emphasized the same facts. In the five years since the article of Williams was written some improvement in these conditions has undoubtedly taken place, as would be expected in connection with the present remarkable tendency toward the raising of standards of medical education in the United States. However, there is no question that further improvement is greatly needed.

Communities are still to a great extent indifferent to or ignorant of the number of lives of women lost yearly from childbirth; many communities which are proud of their low typhoid or diphtheria rates ignore their high rates from childbed fever. Communities are only beginning to realize that among their chief concerns is the protection of the babies born within their limits, and necessarily also of the mothers of those babies before and at confinement.

The second fundamental cause of the high death rates from childbirth in this country previously spoken of—that is, the difficulty of obtaining adequate care—is seen to depend to a large extent on the first, the general ignorance of need for good care. As women, their husbands, physicians, and communities realize the absolute need of skilled care for the prevention of needless deaths from childbirth, methods for providing such care will be developed. In this development special problems will have to be solved in each type of commu-

[1] Williams, J. W. Supra cit., p. 182.

nity, and in each section of the country—North, South, East, and West. These problems are different from those of foreign countries. While the methods being employed in such countries for reducing the maternal death rate may be suggestive, special methods adapted to the conditions in this country will probably have to be worked out. Of the greatest value, however, as examples, are pieces of work such as that now being carried on in England and other European countries for maternal and infant welfare, that of the New Zealand Society for the Health of Women and Children, the work of the Victorian Order of Nurses of Canada, and of the mayor of the little French town of Villiers-le-duc.[1]

Certain typical problems, characteristic of especial types of communities in this country, may be outlined briefly. In many of the larger cities excellent prenatal and obstetrical care can be obtained by those who can pay considerable sums for it and who realize its importance sufficiently to be willing to do so. In many cities, also, much progress has been made in the provision, through obstetrical clinics and hospitals, of good prenatal and obstetrical care, free or at low cost, for those who otherwise could not afford it. Yet even in a city well supplied with such clinics the number of women reached is relatively small in comparison with the total number of women who bear their children without adequate care during pregnancy and labor. In many large cities, especially those with a large percentage of foreign or of colored population, the untrained midwife is a much-discussed problem. It is well known, moreover, that women of moderate means, who represent a very large proportion of women bearing children, have, in most modern cities, received least benefit from improvements in standards of prenatal and obstetrical care. In working out plans for decreasing the death rate from childbirth in large cities the interests of this group can not be ignored. The problem must be considered as one which must be solved for all classes in a community; it must be realized that it is a problem of the greatest importance to the community as a whole. A very hopeful tendency is the one shown already in some cities, to look upon such service not as a charity but as a concern of the municipality as truly as the protection of its homes from fire and burglary or its milk and water supply from contamination.

In rural districts the problems are essentially different. In many such districts, especially in the North and West, where pioneer conditions still prevail, the question is not one of good or bad obstetrical care but of the inaccessibility of any care at all at this time. Many women bear their children with no attendant other than the hus-

[1] Rapport sur un Arrêté Municipal pris par M. Morel de Villiers. Bulletin de l'Académie de Médecine. 1904. 3e série, Vol. LI, p. 222. Moore, S. G. "The Milroy lectures on infantile mortality and the relative practical value of measures directed to its prevention." Lecture III, Lancet, 1916. Vol. CXC, p. 943.

band, a relative, or a neighbor. The nearest physician may be many miles away, the nearest hospital much farther. The expense of calling a physician must necessarily be great, and usually is not considered justifiable. These women have of course no care during pregnancy; if complications develop they are unforeseen, and help is not available. As help in household tasks is usually unprocurable, many women must take up their work much sooner than they should. It may be urged that in practice it would be quite impossible for women living under rural conditions to be provided with such skilled supervision during pregnancy and such care at and after confinement as are now considered ideal. It certainly is not true, however, that a feasible community plan could not be worked out, if the interest of the community demanded it. Such a plan would necessarily recognize two main problems: (1) The best practical care of normal cases and (2) the detection of abnormal cases and their care.

A unit plan for a rural county would perhaps include:

1. A rural nursing service, centering at the county seat, with nurses especially equipped to discern the danger signs of pregnancy. The establishment of such a service would undoubtedly be the most economical first step in creating the network of agencies which will assure proper care for both normal and abnormal cases. In the rural counties in the United States which already have established nurses, the growth of this work will be watched with the greatest interest.

2. An accessible county center for maternal and infant welfare at which mothers may obtain simple information as to the proper care of themselves during pregnancy as well as of their babies.

3. A county maternity hospital, or beds in a general hospital, for the proper care of abnormal cases and for the care of normal cases when it is convenient for the women to leave their homes for confinement. Such a hospital necessarily would be accessible to all parts of the county.

4. Skilled attendance at confinement obtainable by each woman in the county.

As examples have been chosen the special problems in large cities and in pioneer rural districts. Other types of communities in this country present some of the same problems or others just as urgent. In each community, large or small, the essential problem is the same—how to bring about a general realization of the need for adequate care for each woman at childbirth, and how to secure such care.

This report attempts to open for lay discussion and medical study the subject of the preventable loss of life caused by childbirth in this country. Greater interest in the subject surely will lead to the development of new and successful methods for the prevention of these needless deaths.

PART II. DETAILED ANALYSIS OF METHODS AND STATISTICAL DATA.[1]

DISCUSSION OF CERTAIN TERMS AND METHODS USED IN THIS REPORT.

International Classification of Causes of Death.

Official mortality statistics are derived from the returns of the causes of the deaths which occur annually. Such a return is made on the death certificate by the attending physician or by some person assumed to be familiar with the facts as regards the cause of death. Before the establishment in 1900 of the International Classification of Diseases and Causes of Death many different methods were used in different countries for the classification of these causes as returned on the certificates. The resultant confusion made difficult or impossible the comparison of the mortality statistics of various countries and led to the proposal of this uniform method of classification, called the "International Classification." Various countries have adopted this system of classification at various times; the United States Bureau of the Census adopted it for use in the calendar year 1900; Great Britain for use in 1911. It is planned to keep this classification up to date through revisions at 10-year intervals. The second revision was made in 1909, and a considerable number of changes were made. Differences in classification between the International List of Causes of Death and the lists in use in countries where the International has not been adopted and between the different revisions of the International List are extremely important, as will be shown, in any comparison of the death rates of various countries and of the same country for a series of years.[2]

In the detailed International List of Causes of Death, second decennial revision, Paris, 1909, the heading "VII—The Puerperal State" includes: (134) Accidents of pregnancy; (135) Puerperal hæmorrhage; (136) Other accidents of labor; (137) Puerperal septichæmia; (138) Puerperal albuminuria and convulsions; (139) Phlegmasia alba dolens, embolus, sudden death; (140) Following childbirth (not otherwise defined); (141) Puerperal diseases of the breast.

The abridged International List of Causes of Death (same revision) makes but two divisions of all the causes of death included in the detailed list under The Puerperal State. These divisions are:

(31) Puerperal septichæmia (puerperal fever, peritonitis), corresponding to number (137) of the detailed list.

[1] Part II will be of interest chiefly to students of statistics.

[2] For a discussion of this subject see Bureau de la statistique générale de la France: Statistique Internationale du Mouvement de la Population, 1913, p. 155*.

(32) Other puerperal accidents of pregnancy and labor, corresponding to Nos. (134), (135), (136), (138), (139), (140), and (141) in the detailed list.

In this report in the discussion of the Census figures and the tables, the classification of deaths according to the International List of Causes of Death, second revision, is used. The names for the different groups have been slightly changed, as it was felt that the names used in the International List give a misleading or obscure impression to those unfamiliar with this list.

In giving deaths and death rates the following terms and classification are used:

(a) *Childbirth, or all diseases caused by pregnancy and confinement,* which is the sum of (b) and (c) and corresponds to VII—The Puerperal State of the detailed International List and to the sum of (31) and (32) of the abridged International List.

(b) *Puerperal septicemia, or childbed fever,* which corresponds to (31) Puerperal septichæmia of the abridged International List, and to (137) Puerperal septichæmia of the detailed International List.

(c) *All other diseases caused by pregnancy and confinement,* which corresponds to (32) Other puerperal accidents of pregnancy and labor of the abridged International List, (134) to (136), and (138) to (141) of the detailed International List.

A few words of explanation may be useful with regard to these diseases and complications. In the term "accidents of pregnancy" the word "accident" is not used in its ordinary sense but in the sense of complications due to the pregnant condition. It includes miscarriage, severe hemorrhage during pregnancy, uncontrollable vomiting, and other complications.

"Puerperal hæmorrhage" includes severe hemorrhage at or following labor. It includes placenta prævia.

"Other accidents of labor" includes cases of difficult labor, operative delivery, rupture of the womb, and other complications, except hemorrhage, occurring at the time of labor.

"Puerperal septichæmia" (childbed or milk fever) is an infection coming on after labor or miscarriage.

"Puerperal albuminuria or convulsions," or "eclampsia," is an acute toxemia occurring during pregnancy, or during or after confinement, characterized, in its severest form, by convulsions.

"Phlegmasia alba dolens," often known as "milk leg," is a disease characterized by the swelling of a leg after confinement or miscarriage. The cause is the stoppage of a large vein of the thigh by a blood clot.

"Embolus" means blood clot. Sudden death may result from the carrying of such a blood clot to the heart or lungs.

"Following childbirth" (not otherwise defined) includes among other conditions insanity occurring after pregnancy or labor.

"Puerperal diseases of the breast" include inflammation or infection of the breast during lactation.

Death-registration area.

The statistics of causes of death are available only for a certain portion of the United States, included in the so-called "death-registration area." Unlike other civilized countries, the United States has no uniform laws for the registration of births and deaths. Moreover, the efficiency of enforcement of existing laws varies greatly in the different States. The Bureau of the Census in 1880 therefore established a "death-registration area," which comprises "States and cities in which the registration of deaths is returned as fairly complete (at least 90 per cent of the total), and from which transcripts of the deaths recorded under the State laws or municipal ordinances are obtained by the Bureau of the Census."[1] In 1880 this area included but 17 per cent of the total population of the United States. As States and cities have passed better laws and obtained better enforcement they have been added to the registration area; the latter has increased greatly in size, but even in 1913 included only 65.1 per cent of the population of the United States. For the remaining 34.9 per cent of the population of the country we have no reliable statistics. This 34.9 per cent includes the population of the greater number of the Southern States and of many Middle Western and Western States outside of certain registration cities in these States which are included in the area. No statements can be made, therefore, of the number of deaths from any cause in the United States as a whole; only an estimate can be made on the assumption that for any cause of death the same rate prevails in the remainder of the United States as in the death-registration area.

Provisional birth-registration area.

The registration of births is still more incomplete in this country than is the registration of deaths. For 1910 the United States Bureau of the Census established a "provisional birth-registration area," including the New England States, Pennsylvania, Michigan, New York City, and Washington, D. C.[2]

Methods of computing the death rates from all causes connected with pregnancy and confinement.

(1) *Death rates per 100,000 inhabitants.*—Trask[3] gives the definition, "Death rates may be expressed as the ratio of the total number of deaths, taken as a unit, to the population. For example: 1 in 60. The usual method, however, is to express these rates in terms of the

[1] U. S. Census. Mortality Statistics, 1911, p. 9.
[2] U. S. Census. Mortality Statistics, 1911, p. 25.
[3] Trask, J. W. "Vital statistics." U. S. Public Health Service, Supp. to the Public Health Reports, No. 12, p. 59.

number of deaths per 1,000 population, or in some instances per 10,000 or even 100,000, or 1,000,000." In the publications of the United States Bureau of the Census the death rates of all diseases, including those of the diseases connected with childbirth, are usually expressed in terms of the number of deaths per 100,000 total population. But a death rate computed in this way obviously gives a very misleading impression with regard to a disease to which only one group of the population is liable. In computing the death rate from the diseases connected with childbirth, only women of childbearing age should be considered, or, still better, only women actually bearing children in a given year. All individuals of all ages and both sexes may be exposed each year to a risk of typhoid fever, pneumonia, or tuberculosis; but during the year only the women pregnant or bearing children are exposed to the risk of death from the diseases connected with these functions.

(2) *Death rates per 100,000 women.*—This method of computing rates is somewhat superior to that of computing the deaths per 100,000 total inhabitants. It is used to some extent in foreign reports. These rates have been computed from estimates of female population furnished by the United States Bureau of the Census for the years 1900 to 1910 for the group of 11 States within the death-registration area in 1900. These are given in Table IV, on page 50.

(3) *Death rates per 100,000 women of childbearing age.*[1]—Such a rate, which is a much more accurate one than either of those mentioned above, can be computed for the registration area for only one year, the census year 1900. For that year only has the age and sex distribution of the registration area been published. The number of women 15 to 44 years of age in the registration area in that year was 7,383,154.[2] The number of deaths from childbirth among women 15 to 44 years was 3,712; of these 1,594 were from puerperal septicemia and 2,118 from all other diseases of pregnancy and confinement.[3] The death rates were, therefore, from childbirth or all diseases caused by pregnancy and confinement, 50.3; from puerperal septicemia, 21.6; and from all other diseases of pregnancy and confinement, 28.7.

(4) *Death rates per 1,000 births.*—As shown above, the method of computation of death rates which gives the clearest picture of the hazards of childbirth is that which takes into account only the women giving birth to children in that year. This is the method in use in a large number of foreign countries. The advantages of the method are self-evident.[4] A demonstration of the superiority of

[1] The female population between the ages of 15 and 45 years as determined by census enumeration, or by estimation for intercensal and postcensal years.—Trask, J. W. Supra cit., p. 23.

[2] U. S. Twelfth Census, 1900. Vital Statistics, Part I, p. XLII.

[3] U. S. Twelfth Census, 1900. Vital Statistics, Part II, p. 242.

[4] Each death rate is in terms of registered, i. e., living, births. This is a more accurate measure than a statement per 1,000 of total population or per 1,000 total or married women at childbearing ages.—Newsholme, A. Maternal Mortality in Connection with Childbearing. Grt. Brit. Local Govt. Bd., Supp. to Report of Medical Officer for 1914-15, p. 24.

this method of computation is obtained by a study of the tables giving the death rates from these diseases for foreign countries. In certain countries, as for instance Belgium and Hungary, there has been in recent years an apparent fall in the average death rates as computed per 100,000 population, while the average rates computed per 1,000 live births have remained stationary or risen. This phenomenon is due, evidently, to a decline in the birth rate in these countries during these years, and shows how misleading the rates as given per 100,000 population undoubtedly are in countries with declining birth rates. Whether a fall in the birth rate has occurred in the United States is not known. If it has occurred in the registration area, it would mean that the slight rise in rates per 100,000 population between 1900 and 1913 means a greater rise in rates computed according to the number of births. Such an error might compensate for the opposite error due to the more complete registration of deaths from childbirth in the later years of this period.

In computing the rates per 1,000 births two methods are in use: The computation of the number of deaths per 1,000 total births and that per 1,000 live births. Both methods depend upon an accurate registration of births; the first method is used in those foreign countries in which all births including stillbirths are required to be reported; the second, in those countries where only live births are reported. The first is probably the better method, because by it the whole number of women bearing children in a certain year is considered. But even this rate is not absolutely accurate. While the number of deaths includes those from diseases connected with miscarriage, the whole number of women having miscarriages is not used as a base, but only the number of those bearing stillborn and live children. Miscarriages are not reportable in any country, although a number of miscarriages (as the term is usually defined) probably are reported as stillbirths in certain countries. The fact that women having miscarriages are not considered in the base would lead to a somewhat higher death rate than that which would express absolutely the number of deaths per 1,000 women at risk. On the other hand, in the computation of this rate the fact is not taken into consideration that a certain number of births are multiple; that is, the number of births is larger than the number of women bearing children. Still another objection to the use of this rate, especially in the comparison of the rates of different countries, is the fact that the definition of stillbirth varies greatly according to the laws of different countries;[1] that is, in one country many cases may be reported as stillbirths which in another country, having a different

[1] Royal Statistical Society. "Report of special committee on infantile mortality." Journal of the Royal Statistical Society, 1913, Vol. LXXVI, p. 27.

interpretation of this term, might not be reported at all, as they would be classed as miscarriages.

The second method, in which the number of deaths per 1,000 live births is considered, is that used by foreign countries in which the registration of stillbirths is not required. England and Wales, Ireland, Scotland, and New Zealand are among this number.

The variation in different countries with regard to the definition of stillbirth causes a difficulty in the use of this method. In three of the countries studied—France, Belgium, and Spain—the term stillbirth includes infants alive at birth but dying before the registration of birth, i. e., within one to three days of birth. Because of these various difficulties, death rates for the foreign countries have been, wherever possible, computed by both methods.

On account of the lack of accurate birth registration neither method has been used in computing rates for the United States. Only for States and cities in the provisional birth-registration area, and for one year, 1910, can the death rates per 1,000 live births be given. These are shown in Table VI, page 52.

SOURCES OF ERROR IN THE STUDY OF DEATH RATES FROM CHILDBIRTH.

In all mortality statistics, and especially in those with which we are especially concerned in this bulletin, there are two general sources of inaccuracy in the figures: First, the figures for each year may be inaccurate, or may give an incomplete picture of actual conditions because of many different factors, such as incompleteness or inaccuracy of the figures, inappropriate methods of classification or computation, etc. Second, the figures for different years may not be comparable simply because of the great improvements that are made each year in methods of registration, computation, and classification. With the object in view of giving each year as accurate and clear a picture of the actual conditions as possible, tremendous advance in methods has been made yearly in this country and in other countries. This very advance, however, brings with it many difficulties in comparing the figures for the years before such improvements were instituted with those of the years after that time. Each year the figures give us more accurate information of the actual number of deaths and of the death rates; yet each year the comparison of the figures for that year with those in the past is fraught with more danger of error. In general, therefore, the study of the actual number of deaths and the death rates for the last years for which figures are obtainable is more valuable than any comparison of rates for different years. All these sources of error will now be discussed in detail.

Inaccuracy of returns.

As all mortality statistics depend upon the returns of the cause of death as given by the physician or other person on the death certificates, their value depends on the degree of accuracy of diagnosis shown by these returns. As Hoffman[1] has pointed out, the returns for countries in which a medical certificate of the cause of death is not required must be of very small value. He states, however, that "For most of the civilized countries this requirement is met to a reasonably satisfactory degree."

The objection has frequently been raised, however, that there is a large percentage of error even in the returns made by physicians due to mistakes in diagnosis, such errors being more numerous in the case of certain diseases than of others. This matter has been considered by the United States Bureau of the Census.[2] Hoffman[3] defends the general validity of the death returns. He admits that there is serious risk of error in the "Careless or superficial use of the data of mortality statistics, irrespective of the diseases dealt with; for, as pointed out by Longstaff, * * * 'there are numerous fallacies to which the classification of deaths according to their alleged causes is liable,' and he enumerates particularly * * * the more or less varying proportions of indefinite causes, the deliberate falsification of returns for personal or family reasons, and the effect of the progress of medical science, improved diagnosis, etc." Hoffman, however, concludes: "All of these reasons notwithstanding, the conclusion appears to be incontrovertible that on the whole the present system of death registration is entitled to confidence and the results approximately represent the true state of the nation's health."

With regard to the diseases in question, however, inaccuracy of the returns undoubtedly constitutes a special source of error in the figures for all countries. The statistics of deaths due to puerperal septicemia (childbed fever or infection at the time of miscarriage or childbirth) are without question very incomplete. Many deaths due to this disease are reported, for obvious reasons, as due to some other condition or to some general condition, such as septicemia, pyemia, and the like. This fault in all statistics on the subject has been commented on very frequently both in this country and in foreign countries.[4]

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[1] Hoffman, F. L. The Mortality from Cancer Throughout the World, 1915, p. 2.

[2] U. S. Census. Mortality Statistics, 1912, p. 24.

[3] Hoffman, F. L. Supra cit., p. 3.

[4] (a) It is very difficult to make accurate statements as to the frequency of puerperal infection, especially when it occurs outside of hospital practice. Concerning this condition the vital statistics of the health officers of the various American cities are of no value, inasmuch as the vast majority of deaths from this disease are returned as being due to malaria, typhoid fever, pneumonia, or other causes.—Williams, J. W. Obstetrics, 1913, p. 900. (b) It is very difficult to estimate the frequency of puerperal infection outside of hospitals, since many deaths are reported as due to typhoid, malaria, pneumonia, etc.—Edgar, J. C. The Practice of Obstetrics, 1903, p. 752. (c) It is not unlikely, furthermore, that in a considerable number of deaths due to childbearing the fact that they are associated with childbearing escapes certification.

It follows, however, that almost never is a case reported as due to infection at confinement when it is really due to some other cause; in other words, the figures though undoubtedly incomplete are reliable as far as they go; they are a statement of the minimum number of cases which have occurred. As Newsholme remarks,[1] many cases of puerperal septicemia probably are reported as due to other conditions associated with childbirth; so that the total figures for all diseases associated with this condition should always be noted, although it may be the figures for puerperal septicemia in which our immediate interest lies.

Many deaths due to other complications of pregnancy and confinement are also undoubtedly reported under other headings. This is especially true of cases of puerperal albuminuria and convulsions, which are reported as due to acute nephritis or simply to convulsions; and of hemorrhage or phlebitis following miscarriage or labor, reported without reference to their connection with childbirth.

Limited area and short period of time represented by figures.

In the United States the limited area of the country (the death-registration area) for which any figures are available is an element of weakness in the statistics. Though this area and its population are absolutely very large, they can not be considered as representative of the entire country. Any estimate based on the figures for the registration area is open to criticism on account of differences in age and sex distribution in different parts of the country.

In the United States the short period for which any figures are available lessens greatly the value of a study such as this. In foreign countries comparisons of the death rates for a long series of years may be made, even though errors due to lack of comparability of the figures may occur. In this country information is available

Deaths from puerperal fever are likely also to be understated; and the desirability is confirmed of basing inferences as to excessive mortality from childbearing on all the conditions concerned in this mortality, and not merely on the death returns for puerperal fever.—Newsholme, A. Supra cit., pp. 26, 30. (*d*) It may be objected that owing to faulty registration and deficient death certification the returns are not reliable. That this objection may have some weight in estimating the amount of mortality, especially as regards puerperal fever (in which for obvious reasons the death returns are avowedly defective), I fully admit; but, as this communication seeks to compare the mortality of one year with that of another and of one part of the kingdom with that of another, and as the sources of error apply to each, the result can not be materially affected. In estimating the true amount of mortality, however, a mental correction should certainly be made for this obvious source of error.—Boxall, R. "The mortality of childbirth," Lancet, 1893, Vol. II, p. 10. (*e*) Warren, S. P. "The prevalence of puerperal septicemia in private practice at the present time, contrasted with that of a generation ago." Amer. Jour. of Obstetrics, 1905, Vol. LI, p. 301.

[1] But the above extreme local variations in the proportion between deaths from puerperal fever and from other dangers of childbearing suggest that in death certification there may be local variations in the extent to which deaths from puerperal fever are returned under the heading of other conditions associated with childbearing. * * * On the whole, it is likely that in comparing counties and county boroughs with each other, the safest plan is to utilize only the death rates from the two sets of conditions taken together.—Newsholme, A. Supra cit., p. 26.

only for the census years 1880, 1890, and 1900 and for the calendar years from 1900 to 1913, inclusive. Moreover, the area covered by the reports previous to 1890 was so small that any comparison between years prior to 1890 and years subsequent to that date has seemed unwise.

Methods of computation.

In the United States the computation of the death rates from the diseases in question by a method (computation per 100,000 total population) giving but an inaccurate picture of the facts is necessarily a source of error in the study. This method also makes difficult a comparison of the death rates with those of foreign countries.

Sources of error in comparisons of death rates of different years.

There are many special sources of error involved in the comparison of death rates of the registration area of the United States from these causes in different years.

First. Differences in the constitution of the death-registration area cause one of the most important difficulties in comparison. As before stated, the death-registration area is not an unchanging entity, but has been added to almost yearly as registration has improved in various States and cities. This constant increase constitutes a serious source of error in comparing the death rates for this area for different years. Within the course of the years studied, States or cities having a particularly high or low rate from the disease in question may have been added to the registration area.[1] This difficulty is so serious that in making comparisons of the death rates in the registration area of the United States from a certain disease through a series of years the publications of the United States Bureau of the Census always point out the influence which the inclusion of a certain State may have had upon the rate of the disease in question for the registration area.

The same method may be applied, for example, to a comparison of the death rates from childbirth in the registration area for the years 1909 and 1910. In 1909 the rate for the registration area was 15.3; in 1910, 15.7. In 1910, however, four States—Minnesota, Montana, Utah, and North Carolina[2]—were added to the registration area and one State—South Dakota—was dropped. In that year the death rate from childbirth in Minnesota was 11.9 per 100,000 inhabitants, in Montana 16.4, in Utah 18.4, and in the municipalities of North Carolina 30.7. That in South Dakota in 1909 was 21.7 for the urban and 12.9 for the rural portions of the State. Evidently the exact determination of the effect which the inclusion or exclusion of any one of these States exerted upon the death rate of the registration area is a complicated matter.

[1] U. S. Census. Mortality Statistics, 1909, p. 9.
[2] Municipalities of 1,000 or more inhabitants in 1900.

It was thought wise, therefore, in this study to make, in addition to a comparison of the death rates from childbirth in the registration area for 1890 and from 1900 to 1913, a comparison of the death rates shown (1) for the same series of years by the group of States which have been registration States since 1890, and (2) for the years 1900 to 1913 by the group of States which have been registration States since 1900. Obviously these two comparisons contain no error due to changes in the groups of States compared from year to year.

The group of eight States which have been registration States since 1890 includes all the New England States except Maine, also New York, New Jersey, and the District of Columbia. (See Table II, p. 49.) For this group of States no permanent decrease has occurred in the death rate from childbirth per 100,000 population in the 23 years studied. There was a decrease in the rate between 1890 and 1900, followed by a rise, and then by slightly fluctuating rates. The rates for 1890[1] and 1913, however, are almost identical—14.1 and 14.3 per 100,000 inhabitants.

The rates for the second group of 11 States show no decline but rather an increase in the 13 years from 1900 to 1913. These States have been registration States since 1900 and include, besides the 8 above mentioned, Maine, Michigan, and Indiana. The death rate from childbirth in 1900[2] was 13.4; in 1913, 14.9; with fluctuations between 12.7 and 15.5.

The fact that the death rates from childbirth show no decrease in the registration area from 1890 to 1913 (see Table I, p. 49) is therefore corroborated by the two comparisons just made. The rates for this area also show fluctuations from year to year, but are nearly identical for 1890 and 1913, i. e., 15.3 and 15.8.

This possible source of error in the comparison of the rates in the registration area for different years, therefore, is shown to be of practical unimportance.

A comparison of the three Tables I, II, and III brings out several interesting facts. Tables I and II both show a decline in the rates between 1890 and 1900; this fall is followed by a corresponding rise and fluctuating rates. The rates for the group of 8 States shown in Table II are almost uniformly slightly lower for each year than are those of the death-registration area shown in Table I.

Second. The most important source of error in the comparisons of the death rates of various years is due to the improvements which have been made yearly in the accuracy of the returns of the cause of death. In each State, newly admitted to the registration area, improvements are made continually in the completeness and accuracy of the death returns. In addition one special improvement has been made in the returns in the registration area.

[1] Census year ending May 31. [2] Calendar year

It has already been pointed out with regard to the diseases under consideration that deaths due to puerperal septicemia and to other complications of pregnancy and confinement are frequently reported as due to such indefinite causes as septicemia, pyemia, hemorrhage, phlebitis, convulsions, etc. In several foreign countries the attempt has been made for some years to render the records more complete by making inquiries as to cases of death of women of childbearing age where the cause of death is an indefinite one of this character. To each physician making such a report for a woman of childbearing age a confidential inquiry is sent, asking whether or not the cause of death had any relation to childbirth or miscarriage. Boxall[1] states that this has been done in England since 1881 and has resulted in an increase of about 12 per cent in the number of cases reported as due to puerperal septicemia. In this country since about 1906[2] the State registrars of vital statistics have cooperated with the United States Bureau of the Census in making their reports more complete through this practice.

For several years[2] the Census Bureau has made an inquiry in many cases where the cause of death of a woman of childbearing age has been returned to it as septicemia, pyemia, or peritonitis, and additional cases of puerperal septicemia have been added in this way. That bureau is unable, however, to estimate the percentage of cases which have thus been added. In a test[3] in which a number of letters of inquiry were sent to physicians returning deaths as due to meningitis, paralysis, convulsions, pneumonia, and peritonitis, 102 cases returned as peritonitis were thus investigated. Eight cases were changed to puerperal septicemia following the answer to these inquiries. The following statement is made: "If the percentages of change resulting from this investigation, which, though limited, may prove to be fairly representative, be applied to the numbers of deaths compiled from the various causes for the registration area for 1911, * * * some of the definite causes would be increased as follows: * * * Puerperal septicemia from 4,376 to 4,560, or 4.2 per cent."[3]

Without doubt, therefore, the records in this country since 1906, and especially since 1912, are more complete than those for previous years.[4]

Obviously greater accuracy of the returns leads to an apparent rise in rate, even when the true death rate is stationary or declining slightly. It is impossible to estimate how great has been the influence

[1] Boxall, R. "Mortality in childbed, both in hospital and in general practice," Jour. of Obstetrics and Gynæcology of the British Empire, 1905, Vol. VII, p. 322; Newsholme, A. Supra cit., p. 25.

[2] Statement by Chief Statistician for Vital Statistics, U. S. Bureau of the Census.

[3] U. S. Census. Mortality Statistics, 1911, pp. 37, 38.

[4] Similar improvements in the records for other causes of death have been made in recent years through the method of making similar inquiries with regard to deaths reported as due to such indefinite causes as simple meningitis, paralysis without specified cause, etc. See U. S. Census. Mortality Statistics, 1912, pp. 23, 24, and Dublin, L. I., and Kopf, E. W. "An experiment in the compilation of mortality statistics," Quart. Public. of the Amer. Stat. Assn., 1913, Vol. XIII, p. 639.

of this factor upon the death rates of childbirth and of puerperal septicemia since 1900. As an index the changes in the death rates for the death-registration area from the indefinite causes, "purulent infection and septicemia," "simple peritonitis," "convulsions," and "hemorrhage, other diseases of the circulatory system," between 1900 and 1913 should be studied.

It is significant that the average death rate from purulent infection and septicemia, which in 1901–1905 was 6.1 per 100,000 population, fell in 1906–1910 to 3.8 and then decreased steadily, being 2.8 in 1913.[1] In the same way the death rate from simple peritonitis, which was 10.8 in 1901–1905, fell to 6.1 in 1906–1910 and 2.7 in 1913.[1] The other causes mentioned have shown a decline which is much less marked.

As these death rates represent those of the entire population, not those of women of childbearing age, their decline can be ascribed only in part to the fact that a number of cases formerly returned as due to these causes are now ascribed to puerperal septicemia and other diseases caused by pregnancy and confinement. It is plain, however, that this factor has been a very important one in determining their decrease.

In general, then, it may be stated that recent improvements in death certification must be borne in mind in making comparisons of the death rates from childbirth since 1900; that these improvements probably account for the apparent rise in the death rate between 1900 and 1913, and may, indeed, conceal a slight actual decrease in the rates during those years. It is not, however, probable that any substantial decrease in rate has been concealed in this way.

The comparisons made in Tables II and III of rates for the group of 8 States which have been in the registration area since 1890 and for that of 11 States which have been in this area since 1900 are probably less subject to this source of error than is a comparison of rates for the registration area. In the States in which registration has been good for a number of years improvements made in the returns for the more recent years will not be so marked a factor.

Third. A third source of error in the comparison of death rates for various years in this country results from the changes in classification of causes of death which have been made. In the United States the International List of Causes of Death was adopted for use in the calendar year 1900. A different classification was in use before that time. The group of diseases included in the older classification under "Affections connected with pregnancy" are included under the title "The puerperal state," Division VII of the detailed International List (see p. 29), corresponding to the terms "Child-

[1] U. S. Census. Mortality Statistics, 1913, pp. 53, 54.

birth" or "All diseases caused by pregnancy and confinement" as used in this bulletin. Therefore these large groups can be compared for the census years 1890 and 1900 and the calendar years 1900 to 1913. The title puerperal septicemia of the older classification does not correspond, however, to that of "puerperal septichæmia" of the International Classification. Nevertheless, it has been thought best to print the figures for puerperal septicemia for the census years 1890 and 1900 with the warning that these figures are not exactly comparable with the figures for this disease for the calendar years 1900 to 1913. At the second revision of the International Classification, in force for the registration area January 1, 1910, several changes were made in the classification of the group of diseases with which we are concerned, i. e., "The puerperal state." These changes do not affect the whole group, but only the subgroups, especially No. 137, "Puerperal septichæmia." Three causes of deaths included under this heading under the first revision were removed and included under other headings; these are: Puerperal toxemia, included now under 138; puerperal phlebitis, changed to a separate heading, 139; and retention of the placenta, now included under 135. No other groups previously not included were added to "Puerperal septichæmia" in that year. These changes would naturally cause a decrease in the number of deaths ascribed to puerperal septicemia and a corresponding decrease in the death rate for this disease, with an increase in the rate of those included under "Other diseases caused by pregnancy and confinement." This must be remembered in comparing the rates for years succeeding 1910 with those preceding it, both in the United States and in all other countries studied. How far this change in the death rate for puerperal septicemia compensates in the United States for the opposite error due to the more complete returns for this disease brought about by the inquiries sent by the Bureau of the Census it would be impossible to say.

Sources of error in a study of foreign statistics.

It may be claimed that a comparison of the vital statistics of various foreign countries involves a certain risk of error due to differences in the methods of registration employed in the various countries and in the degrees of accuracy of the returns. For instance, the comparatively low death rate of a certain country may be explained as being due to the incompleteness of the returns in that country. Beyond this source of error, which can not be avoided, two other especial sources appear to exist in the comparison of the death rates from the diseases caused by childbirth. The first one is that already treated at some length, i. e., the development of errors due to the different methods used by different countries in computing the rates. This source of error has been avoided by reckoning the rates uniformly for

each country in the group considered according to two different methods, i. e., per 100,000 total population and per 1,000 live births. While neither method of computation is an ideal one, it has been necessary to use them as they alone give a basis of comparison of the rates of all the countries considered.

A second source of error has also been alluded to; it is the lack of uniformity in methods of classification of the causes of death. Many of the countries under consideration have not used the International Classification at all, or only for a portion of the period studied. As the best means available for avoiding this difficulty, the figures for each country have been used as published in the Statistique Internationale du Mouvement de la Population d'après les Registres d'Etat Civil, prepared by the Ministère du Travail, Bureau de la Statistique Générale of France. In this publication figures for countries not using the International Classification have been rearranged to conform as nearly as possible to the divisions of the International List. Figures, however, are available from this source only up to the year 1910; for the years following, figures have been obtained from the latest available original reports of each country. For those countries not using the International Classification the figures have been rearranged in the same way to conform to it as nearly as possible.[1]

Slight differences in methods of classification will probably not affect the death rates to any great extent, nor will they often affect the number of deaths, and consequently the death rates, of the whole group of diseases—"The puerperal state," or "All diseases caused by pregnancy and confinement." Only the proportion of deaths to be ascribed to either of the two subgroups "puerperal septicemia" and "other diseases caused by pregnancy and confinement," will be affected. A rearrangement of the deaths within the group, ascribing a larger number of deaths to puerperal septicemia will bring, of course, a decrease in those reported as due to "other diseases caused by pregnancy and confinement." For this reason, therefore, the total number of deaths for the large group and the death rate for this group are more important than those of the subgroups. (See p. 36.) An exception to the statement in regard to the differences in method of classification must be made for the figures of England and Wales. Previous to 1911, the year in which the International Classification was adopted, a certain group of deaths almost universally included under the large group "The puerperal state" or "All diseases caused by pregnancy and confinement" was not included in the English and Welsh figures, i. e., deaths due to puerperal nephritis and albuminuria. Consequently in these earlier years the reports of deaths

[1] On pages 57 to 59 will be found especial notes as to difficulties encountered in the reclassification of the figures of various countries.

ascribed to childbirth or all diseases caused by pregnancy and confinement are incomplete and the death rates from this group of causes are lower than would have been the case had the International Classification been used. This fact must be remembered in making comparisons between England and Wales and other countries. The amount of the error, which is not a very large one, can be estimated by noting the number of deaths annually reported from this cause for the years 1911 to 1914. (See p. 58; also Table XV, p. 60.) Whether or not there is the same incompleteness in the figures of other countries could not be learned from the reports.

In general, foreign statistics have been used in this report as giving a rough estimate of actual conditions. Unfortunately more exact information is not in existence. It has not been considered wise, in view of the possibilities of error in the material, to use any method of analysis which assumes a higher degree of accuracy than can be attributed to all the existing figures.

FOREIGN STATISTICS.

Comparison of the average death rates from childbirth in certain foreign countries and in the United States.

1. *Average death rates per 100,000 population.*—In order to obtain a basis for comparison with the rates for the death-registration area of the United States the average rates for 15 foreign countries have been reckoned according to the number of deaths per 100,000 population. These rates are given in Table XII, on page 56, in which the countries are arranged in order, the one having the lowest rate being first. Many of the countries show rates differing but very little from that of the United States. The rates for 9 of the 16 countries vary between 12.4 and 15.2, while that of the registration area is 14.9. Other facts brought out by this table are mentioned on page 22.

2. *Average death rates per 1,000 live births.*—It has been realized that the average death rate from these diseases as above computed gives a very misleading idea of the actual death rate on the basis of the number of women bearing children. Differences in the age and sex composition of the population of the countries studied, and, above all, differences in the birth rate, obviously lead to great error. Unfortunately the rate per 1,000 births can not be given for the death-registration area of the United States, though it can be given for one year (1910) for the provisional birth-registration area. This rate is 6.5 per 1,000 live births. The comparison of such a rate, for a limited area of a country reckoned only for one year, with average rates of other countries reckoned for a series of years, is of course unfair. Still it is a noteworthy fact that the rate for this small area of the United States is considerably higher than that for any country in the group considered.

Table XIII, page 56, gives the average death rates reckoned per 1,000 live births for the 15 foreign countries already studied arranged in order, the one having the lowest rate being first. The order here shows a considerable variation from that in the previous table. However, the same group of countries shows the lowest rates computed according to either method of computation; these are Sweden, Italy, and Norway. Similarly, the highest rates in both tables are shown by a second group of countries—Belgium, Spain, Switzerland, Australia, and Scotland. The rates for Ireland form an exception. The rate for that country, reckoned per 100,000 inhabitants, is only moderately high; reckoned per 1,000 live births, however, it is one of the higher rates.

3. *Percentage of deaths caused by puerperal septicemia.*—Another interesting feature of the foreign figures is the great variation shown among the different countries in the percentage of the total deaths from childbirth which are ascribed to puerperal septicemia. Table XIV gives these figures for each country for as large a part of the period 1900 to 1910 as figures are available. As pointed out frequently throughout this report, on account of the inaccurate returns from puerperal septicemia the total rate from childbirth is a more reliable one than is the rate from puerperal septicemia; therefore, sweeping conclusions can not be based on these comparisons. Otherwise these figures would be extremely significant, as the deaths from puerperal septicemia are the most easily preventable of all the deaths from childbirth. In the larger number (11) of the 15 foreign countries studied the deaths from puerperal septicemia constitute from 30 to 50 per cent of the total number of deaths from childbirth. In the registration area of the United States they represent 44 per cent. Norway, 51.2 per cent, and Spain, 62.8 per cent, show the only two percentages higher than 50; New Zealand, 25.2 per cent, and Hungary, 26.7 per cent, show markedly low percentages.

Comparison of the changes in the death rates from childbirth in certain foreign countries for the years 1900 to 1913.

Far more valuable than a comparison of average rates of foreign countries is a study of the rates of each country for a series of years in order to discover whether they are decreasing or increasing and to compare such changes in the various countries. While it may be dangerous on account of different methods of registration and classification to compare the rates of different countries, no such source of error is attached to the comparison of rates in the same country for a number of years. The period 1900 to 1913 (or the latest year for which figures are available) is a very short one for a study of a change in death rates. It would have been far more interesting to study the death rates for a long series of years in each country, choosing a

period beginning before the introduction of methods of asepsis. But such a study for the complete list of countries considered was not thought advisable, because of the difficulties caused by variations in classification of causes of death in the earlier years.

In order to study the rates for any increase or decrease occurring during the last 13 years, the rates per 1,000 [1] live births will be used rather than those per 100,000 population. In several countries—Belgium, Hungary, Italy, Norway, Prussia, and Spain—the rate from childbirth per 100,000 population apparently has fallen during the period, while the rate per 1,000 live births has remained almost the same, or has risen. The cause of this inconsistency, as explained on page 33, is the fact that in these countries the birth rate or the proportionate number of births to the number of inhabitants has decreased.

Average death rates for the foreign countries studied are given for periods of from 3 to 5 years in Table XVI. Differences in averages from period to period are more significant than differences in rates from year to year, and they indicate more accurately and readily whether death rates in a given country are increasing or decreasing.

In preparing Table XVI it would have been more satisfactory to base averages on identical five-year periods for all countries, but since the periods for which the information was available varied so widely in different countries, this procedure was impracticable, and the complete periods were divided into as nearly uniform subperiods as possible.

The countries will be considered in different groups.

Countries showing a decrease in the death rates from all diseases caused by pregnancy and confinement.—England and Wales show a fall in the total death rate from these diseases and also a fall in the death rate from puerperal septicemia in the years between 1900 and 1914.[2] The total death rate per 1,000 live births fell from 4.4 in 1900–1904 to 3.7 in 1910–1914. The death rate from puerperal septicemia per 1,000 live births was 1.9 in 1900–1904, and 1.4 in 1910–1914. The still greater apparent drop in the rates per 100,000 inhabitants will be noted. This decrease in the rates from these diseases in England and Wales since 1900 is especially important because the lack of decrease for a long period of time before 1900 has been the subject of considerable discussion.

Boxall [3] in 1893 and 1905 published two reports which aroused medical interest. Based on studies of the figures published by the

[1] The rate per 1,000 live births will be found in column 8 of Table XV, p. 60.

[2] In studying the figures after 1910, only the figures given as 1911 (a) and 1912 (a), etc., must be compared with the figures of years before 1910, for the reasons explained on p. 58.

[3] Boxall, R. "The mortality of childbirth," Lancet, 1893, Vol. II, p. 9; "Mortality in childbed, both in hospital and in general practice." Jour. of Obstetrics and Gynæcology of the British Empire, 1905, Vol. VII, p. 315.

registrar general, these reports comment on the lack of decrease in the total mortality from childbirth and from puerperal septicemia in the period since the introduction of methods of antisepsis.

Sir Arthur Newsholme, medical officer of the Local Government Board of England, published last year a most interesting report on maternal mortality in connection with childbearing in England and Wales.[1] The report in question will no doubt be the inspiration of studies of this subject in many countries, just as it has been of the present report on conditions in the United States. He finds that from 1874 to 1893 there was no decline in the rates from puerperal septicemia, or from other conditions associated with childbirth, but that since 1895 there has been a marked decline in the rate from puerperal septicemia and a decline in the total rate from childbirth. There has been, however, little change in the death rate from conditions other than puerperal septicemia caused by childbirth. He writes: "Even so far as puerperal fever is concerned, notwithstanding the improvement already secured, it must be regarded as highly unsatisfactory that in 1914 for every 644 infants born 1 mother lost her life from puerperal infection, either present before the birth of the infant, or more often acquired during or soon after its birth. A large portion of this mortality, with its still greater amount of associated sickness, could at once be prevented were adequate antenatal care and skilled attendance under satisfactory conditions at and after birth made available."[1]

The interest in this subject in England is reflected in several acts which have been passed in recent years with the object of securing better antenatal and confinement care for all women at childbirth. These are the midwives act, 1902; the notification of births act, 1907; the notification of births (extension) act, 1915, the maternity benefits under the national insurance act, and the voting of grants by Parliament in aid of work done by local authorities and voluntary agencies to promote maternal and child welfare work.

The rates for Ireland show a decrease in the death rate from childbirth. In 1902 to 1906 the rate was 5.8; in 1911 to 1914 it was 5.2. There was also a slight decrease in the rate from puerperal septicemia.

Japan shows also a fall in the rate from childbirth from 4.2 in 1901–1904 to 3.6 in 1909–1912. The death rate from puerperal septicemia, however, has increased slightly.

The rates for New Zealand and Switzerland have also shown a decline in the periods studied.

Countries showing almost stationary rates from the diseases caused by pregnancy and confinement.—This group includes all the remaining countries considered except Scotland. In several of these countries

[1] Newsholme, A. Maternal Mortality in Connection with Childbearing. Grt. Brit. Local Govt. Bd., Supp. to Report of Medical Officer for 1914–15, pp. 22, 23.

there has been a slight fall or rise in the rates between the first and last period, amounting in each case to less than 0.5 of 1 per 1,000 live births.

In Prussia no demonstrable fall has occurred in the rate per 1,000 live births from all diseases caused by pregnancy and confinement, nor in that from puerperal septicemia. The total rate in 1903 to 1906 was 3.2; in 1907 to 1910 it was 3.1.

The almost stationary rates for Australia, Belgium, Hungary, Italy, Norway, Spain, and Sweden will also be noted in the tables.

In all of these countries numerous physicians have called attention to the stationary or rising death rates from childbirth and from childbed fever. A large medical literature has grown up on this subject. Von Herff [1] comments on the figures published by Krohme, showing for Prussia an increasing death rate from puerperal septicemia in the years 1901 to 1904. He attributes it to the laxity of physicians in carrying out antiseptic methods and to the unnecessarily frequent use of forceps and to other obstetrical operations. Buess [2] and Winter [3] are among those who have written more recently on the question of these death rates in Switzerland, East Prussia, and other European countries.

Countries showing a rise in rates.—The total mortality rate from diseases of childbirth for Scotland has shown a definite increase from 5.1 per 1,000 live births in 1901–1905 to 5.8 in 1911–1914. This increase, however, has not been due apparently to an increase in the rate from puerperal septicemia; in fact, this rate has shown a fall.

[1] Von Herff, O. "Wie ist der zunehmenden Kindbettfiebersterblichkeit zu steuern ? Minderung der Operationen. Besserung der Desinfektion in der Hauspraxis." Münchener Medizinische Wochenschrift, 1907, Vol. LIV, p. 1017.

[2] Buess. Zeitschrift für Geburtshülfe und Gynäkologie, 1915, Vol. LXXVII, p. 735.

[3] Winter. "Die Bekämpfung des Kindbettfiebers in Ostpreussen." Deutsche Medizinische Wochenschrift, 1908, Vol. XXXIV, p. 2244.

PART III. GENERAL TABLES.

TABLE I.—*Population, deaths, and death rates per 100,000 population in the death-registration area from diseases caused by pregnancy and confinement, 1890 and 1900 to 1913.*

Year.[1]	Population of death-registration area.		Deaths from diseases caused by pregnancy and confinement.					
			Number.			Rate per 100,000 population.		
	Total.	Per cent of population of United States.	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.
1890[2]	19,659,440	31.4	3,011	[3] 1,383	1,628	15.3	[3] 7.0	8.3
1900[2]	28,807,269	37.9	3,772	[3] 1,619	2,153	13.1	[3] 5.6	7.5
1900	30,765,618	40.5	4,106	1,769	2,337	13.3	5.7	7.6
1901	31,370,952	40.3	4,294	1,882	2,412	13.7	6.0	7.7
1902	32,029,815	40.4	4,164	1,813	2,351	13.0	5.7	7.3
1903	32,701,083	40.4	4,569	1,992	2,577	14.0	6.1	7.9
1904	33,345,163	40.4	5,109	2,291	2,818	15.3	6.9	8.5
1905	34,052,201	40.4	5,077	2,309	2,768	14.9	6.8	8.1
1906	41,983,419	48.9	6,341	2,622	3,719	15.1	6.2	8.9
1907	43,016,990	49.2	6,719	2,908	3,811	15.6	6.8	8.9
1908	46,789,913	52.5	7,344	3,271	4,073	15.7	7.0	8.7
1909	50,870,518	56.1	7,791	3,427	4,364	15.3	6.7	8.6
1910	53,843,896	58.3	8,455	3,892	4,563	15.7	7.2	8.5
1911	59,275,977	63.1	9,456	4,376	5,080	16.0	7.4	8.6
1912	60,427,247	63.2	9,035	3,905	5,130	15.0	6.5	8.5
1913	63,298,718	65.1	10,010	4,542	5,468	15.8	7.2	8.6
Annual average:								
1901 to 1905	32,699,843	.....	4,643	2,057	2,586	14.2	6.3	7.9
1906 to 1910	47,300,947	.....	7,330	3,224	4,106	15.5	6.8	8.7

[1] Calendar year, unless otherwise specified.
[2] Census year ending May 31.
[3] Figures for puerperal septicemia for the census years 1890 and 1900 not comparable with those for later years. See p. 41.

TABLE II.—*Deaths and death rates per 100,000 population in the 8 States within the death-registration area in 1890* [1] *from diseases caused by pregnancy and confinement, 1890 and 1900 to 1913.*

Year.[2]	Deaths from diseases caused by pregnancy and confinement.					
	Number.			Rate per 100,000 population.		
	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.
1890[3]	1,655	[4] 698	957	14.1	[4] 6.0	8.2
1900[3]	1,806	[4] 791	1,015	12.6	[4] 5.5	7.1
1900	1,905	798	1,107	13.3	5.6	7.7
1901	1,903	747	1,156	13.0	5.1	7.9
1902	1,842	762	1,080	12.4	5.1	7.2
1903	1,998	801	1,197	13.1	5.3	7.9
1904	2,305	996	1,309	14.9	6.4	8.4
1905	2,434	1,033	1,401	15.4	6.5	8.9
1906	2,434	989	1,445	15.0	6.1	8.9
1907	2,595	1,086	1,509	15.6	6.5	9.1
1908	2,450	1,050	1,400	14.4	6.2	8.2
1909	2,537	1,034	1,503	14.5	5.9	8.6
1910	2,608	1,145	1,463	14.6	6.4	8.2
1911	2,722	1,179	1,543	14.9	6.4	8.4
1912	2,574	1,049	1,525	13.9	5.6	8.2
1913	2,707	1,140	1,567	14.3	6.0	8.3

[1] Excluding Delaware.
[2] Calendar year, unless otherwise specified.
[3] Census year ending May 31.
[4] Figures for puerperal septicemia for the census years 1890 and 1900 not comparable with those for later years. See p. 41.

TABLE III.—*Deaths and death rates per 100,000 population in the 11 States within the death-registration area in 1900 from diseases caused by pregnancy and confinement, 1900 to 1913.*

Year.[1]	Deaths from diseases caused by pregnancy and confinement.					
	Number.			Rate per 100,000 population.		
	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.
1900[2]	2,568	[3] 1,150	1,418	12.9	[3] 5.8	7.1
1900	2,682	1,155	1,527	13.4	5.8	7.6
1901	2,704	1,124	1,580	13.3	5.5	7.8
1902	2,626	1,092	1,534	12.7	5.3	7.4
1903	2,778	1,153	1,625	13.2	5.5	7.7
1904	3,216	1,403	1,813	15.1	6.6	8.5
1905	3,219	1,401	1,818	14.8	6.4	8.4
1906	3,229	1,302	1,927	14.5	5.9	8.7
1907	3,448	1,476	1,972	15.2	6.5	8.7
1908	3,343	1,431	1,912	14.4	6.2	8.2
1909	3,422	1,453	1,969	14.5	6.1	8.3
1910	3,641	1,624	2,017	15.1	6.7	8.4
1911	3,806	1,748	2,058	15.5	7.1	8.4
1912	3,527	1,488	2,039	14.1	6.0	8.2
1913	3,789	1,661	2,128	14.9	6.5	8.4

[1] Calendar year, unless otherwise specified.
[2] Census year ending May 31.
[3] Figures for puerperal septicemia for the census year 1900 not comparable with those for later years. See p. 41.

TABLE IV.—*Death rates per 100,000 female population in the 11 States within the death-registration area in 1900 from diseases caused by pregnancy and confinement, 1900 to 1910.*

Year.	Death rate per 100,000 female population from diseases caused by pregnancy and confinement.			Year.	Death rate per 100,000 female population from diseases caused by pregnancy and confinement.		
	Total.	Puerperal septicemia.	All other.		Total.	Puerperal septicemia.	All other.
1900	26.9	11.6	15.3	1906	29.2	11.8	17.5
1901	26.7	11.1	15.6	1907	30.6	13.1	17.5
1902	25.5	10.6	14.9	1908	29.1	12.4	16.6
1903	26.6	11.0	15.5	1909	29.2	12.4	16.8
1904	30.3	13.2	17.1	1910	30.4	13.6	16.9
1905	29.8	13.0	16.8				

TABLE V.—*Number of deaths of women from 15 to 44 years of age in the death-registration area from each cause and class of causes included in the abridged International List of Causes of Death (revision of 1909),*[1] *1913.*

[Computed from figures in Mortality Statistics, 1913, pp. 338 to 349, in which causes of death are given according to the detailed International List of Causes of Death.]

Abridged International List No.	Cause of death.	Number of deaths.
13,14,15	Tuberculosis of the lungs, tuberculous meningitis, other forms of tuberculosis	26,265
31,32	Puerperal septicemia (puerperal fever, peritonitis) and other puerperal accidents of pregnancy and labor	9,876
19	Organic diseases of the heart	6,386
29	Acute nephritis and Bright's disease	5,741
16	Cancer and other malignant tumors	5,065
22	Pneumonia	4,167
35	Violent deaths (suicide excepted)	3,262
1	Typhoid fever	2,706
30	Noncancerous tumors and other diseases of the female genital organs	2,669
26	Appendicitis and typhlitis	1,620
36	Suicide	1,562
23	Other diseases of the respiratory system (tuberculosis excepted)	1,458
18	Cerebral hemorrhage and softening	1,398
24	Diseases of the stomach (cancer excepted)	940
27	Hernia, intestinal obstruction	854
28	Cirrhosis of the liver	598
9	Influenza	489
17	Simple meningitis	484
8	Diphtheria and croup	330
12	Other epidemic diseases	312
6	Scarlet fever	307
5	Measles	304
3	Malaria	250
21	Chronic bronchitis	184
20	Acute bronchitis	90
33	Congenital debility and malformations	24
11	Cholera nostras	18
4	Smallpox	16
7	Whooping cough	9
2	Typhus fever	2
10	Asiatic cholera	----
37	Other diseases	11,688
38	Unknown or ill-defined diseases	458

[1] Except No. 25, diarrhea and enteritis (under 2 years), and No. 34, senility.

TABLE VI.—*Population, live births, deaths, and death rates per 100,000 population and per 1,000 live births from diseases caused by pregnancy and confinement, by States and principal cities in the provisional birth-registration area,*[1] *1910.*

State and city.	Population July 1, 1910 (estimated).	Live births, 1910.	Deaths from diseases caused by pregnancy and confinement.											
			Total.			Puerperal septicemia.			All other.					
			Number.	Rate, Per 100,000 population.	Rate, Per 1,000 live births.	Number.	Rate, Per 100,000 population.	Rate, Per 1,000 live births.	Number.	Rate, Per 100,000 population.	Rate, Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 live births.
Provisional birth-registration area	22,222,404	592,390	3,652	16.4	6.5	1,612	7.3	2.9	2,040	9.2	3.6			
Connecticut	1,119,119	27,291	148	13.2	5.4	65	5.8	2.4	83	7.4	3.0			
Maine	742,382	15,578	110	14.8	7.1	46	6.2	3.0	64	8.6	4.1			
Massachusetts	3,581,657	80,796	412	12.2	4.7	166	4.9	2.1	246	7.3	2.8			
Michigan	2,920,108	63,666	471	16.8	7.5	196	7.0	3.1	275	9.9	4.4			
New Hampshire	430,922	9,385	52	12.1	5.5	18	4.2	1.9	34	7.9	3.6			
New York City	7,603,806	202,643	1,411	18.7	7.1	656	8.6	3.2	755	10.2	3.7			
Pennsylvania	545,282	13,439	82	15.0	6.3	27	5.0	2.0	55	10.1	4.1			
Rhode Island	356,216	7,351	61	17.1	8.3	22	6.2	3.0	39	10.9	5.3			
Vermont	4,709,629	129,365	802	16.7	6.2	376	7.8	2.9	426	8.6	3.3			
Washington, D. C.	352,173	7,016	70	21.1	10.0	40	12.0	5.7	30	9.0	4.3			
Principal cities in foregoing States	4,182,448	109,755	744	17.8	6.8	357	8.5	3.3	387	9.3	3.5			
Bridgeport	102,709	2,976	15	14.6	5.0	6	5.8	2.0	9	8.8	3.0			
New Haven	134,145	3,773	19	14.2	5.0	10	7.5	2.7	9	6.7	2.4			
Boston	673,744	17,758	94	14.0	5.3	38	5.6	2.1	56	8.3	3.2			
Fall River	119,363	4,691	15	12.6	3.2	6	5.0	1.3	9	7.5	2.0			
Lowell	106,761	2,631	8	7.5	3.0	1	.9	.4	7	6.6	2.7			
Worcester	146,736	3,921	20	13.6	5.1	12	8.2	3.1	8	5.4	2.0			
Detroit	470,118	11,999	97	20.6	8.1	46	9.8	3.8	51	10.8	4.3			
Grand Rapids	112,168	2,693	20	17.7	7.4	5	4.4	1.9	15	13.3	5.6			
Philadelphia	1,554,866	38,667	290	18.7	7.5	142	9.1	3.7	148	9.5	3.8			
Pittsburgh	535,384	15,089	120	22.4	8.0	71	13.3	4.7	49	9.2	3.3			
Providence	226,424	5,727	46	20.4	8.0	18	8.0	3.1	28	12.4	4.9			

[1] As established by United States Bureau of the Census. See Mortality Statistics, 1911.

TABLE VII.—*Death rates per 100,000 population in the death-registration area from certain important causes of death, 1890 and 1900 to 1913.*

Year.[1]	Death rate per 100,000 population from—										
	Typhoid fever.	Diphtheria and croup.	Measles.	Whooping cough.	Scarlet fever.	Tuberculosis (all forms).	Pneumonia (all forms).	Diarrhea and enteritis (under 2 yrs.).	Diseases caused by pregnancy and confinement.		
									Total.	Puerperal septicemia.	All other.
1890[2]	46.3	97.8	13.5	15.8	13.6	252.0	186.9	139.1	15.3	[3] 7.0	[3] 8.3
1900[2]	33.8	45.2	13.2	12.7	11.6	190.9	192.0	97.5	13.1	[3] 5.6	7.5
1900	35.9	43.3	12.5	12.1	10.2	201.9	180.5	108.8	13.3	5.7	7.6
1901	32.3	34.0	7.3	9.7	13.1	196.9	161.4	90.9	13.7	6.0	7.7
1902	34.3	30.8	9.5	12.0	12.6	184.5	155.7	84.0	13.0	5.7	7.3
1903	34.1	31.7	9.8	15.8	12.2	188.5	155.1	81.6	14.0	6.1	7.9
1904	31.7	28.3	11.0	6.5	10.8	200.7	171.4	90.9	15.3	6.9	8.5
1905	27.8	23.6	7.5	10.6	6.7	192.3	148.8	97.0	14.9	6.8	8.1
1906	31.3	25.7	12.1	15.1	7.7	180.2	145.5	101.4	15.1	6.2	8.9
1907	29.5	23.6	10.0	11.3	10.0	178.5	156.5	96.6	15.6	6.8	8.9
1908	24.3	21.5	9.9	10.6	11.9	167.6	130.9	95.2	15.7	7.0	8.7
1909	21.1	20.4	9.6	9.6	11.4	160.8	137.6	87.8	15.3	6.7	8.6
1910	23.5	21.4	12.3	11.4	11.6	160.3	147.7	100.8	15.7	7.2	8.5
1911	21.0	18.9	10.0	11.3	8.8	158.9	133.7	77.4	16.0	7.4	8.6
1912	16.5	18.2	7.0	9.3	6.7	149.5	132.3	70.3	15.0	6.5	8.5
1913	17.9	18.8	12.8	10.0	8.7	147.6	132.4	75.2	15.8	7.2	8.6

[1] Calendar year, unless otherwise specified.
[2] Census year ending May 31.
[3] Figures for puerperal septicemia for the census years 1890 and 1900 not comparable with those for later years. See p. 41.

TABLE VIII.—*Deaths and death rates per 100,000 population in cities of at least 8,000 [1] population and in smaller cities and rural districts in the death-registration States from diseases caused by pregnancy and confinement, 1900 to 1913.*

Year.	Deaths from diseases caused by pregnancy and confinement.											
	Number.						Rate per 100,000 population.					
	Total.		Puerperal septicemia.		All other.		Total.		Puerperal septicemia.		All other.	
	Cities of at least 8,000 population.	Cities of less than 8,000 population and rural districts.	Cities of at least 8,000 population.	Cities of less than 8,000 population and rural districts.	Cities of at least 8,000 population.	Cities of less than 8,000 population and rural districts.	Cities of at least 8,000 population.	Cities of less than 8,000 population and rural districts.	Cities of at least 8,000 population.	Cities of less than 8,000 population and rural districts.	Cities of at least 8,000 population.	Cities of less than 8,000 population and rural districts.
1900	1,595	1,087	713	442	882	645	14.9	11.7	6.7	4.8	8.3	6.9
1901	1,607	1,097	661	463	946	634	14.4	12.0	5.9	5.1	8.5	7.0
1902	1,575	1,051	710	382	865	669	13.7	11.5	6.2	4.2	7.5	7.3
1903	1,659	1,119	715	438	944	681	14.1	12.1	6.1	4.7	8.0	7.4
1904	1,968	1,248	892	511	1,076	737	16.4	13.4	7.4	5.5	8.9	7.9
1905	2,069	1,150	937	464	1,132	686	16.8	12.3	7.6	5.0	9.1	7.3
1906	3,060	2,063	1,308	761	1,752	1,302	16.8	13.2	7.2	4.9	9.6	8.3
1907	3,245	2,145	1,427	821	1,818	1,324	17.3	13.5	7.6	5.2	9.7	8.3
1908	3,384	2,654	1,532	1,085	1,852	1,569	16.6	14.5	7.5	5.9	9.1	8.6
1909	3,734	2,936	1,678	1,212	2,056	1,724	16.2	13.8	7.3	5.7	8.9	8.1
1910	4,271	3,123	2,029	1,305	2,242	1,818	17.0	13.8	8.1	5.8	8.9	8.0
1911	4,543	3,926	2,202	1,678	2,341	2,248	16.5	14.6	8.0	6.2	8.5	8.4
1912	4,463	3,551	1,997	1,417	2,466	2,134	15.9	13.1	7.1	5.2	8.8	7.9
1913	5,031	4,013	2,353	1,717	2,678	2,296	17.2	13.8	8.0	5.9	9.2	7.9

[1] For the years 1900 to 1909, inclusive, basis of division was 8,000 according to the census of 1900; for the years 1910 to 1913, inclusive, basis of division was 10,000 according to the census of 1910.

TABLE IX.—*Death rates per 100,000 population in cities that had at least 200,000 population in 1900, and were within the death-registration States of 1900, from diseases caused by pregnancy and confinement, 1900 to 1913.*

Year.	Boston.	Buffalo.	Detroit.	Jersey City.	New York.	Newark.	Washington.
1900	18.5	9.1	24.7	15.9	19.3	12.6	15.4
1901	13.4	15.3	19.5	16.0	17.7	14.8	23.6
1902	14.7	12.5	15.7	16.4	16.4	16.8	15.2
1903	17.4	18.1	15.0	12.0	15.7	9.7	18.0
1904	15.8	16.0	16.3	17.3	19.0	14.6	17.6
1905	14.1	12.9	16.7	17.6	20.3	16.3	17.7
1906	15.0	20.4	15.7	18.4	18.3	18.1	17.0
1907	15.9	19.8	17.1	11.6	18.9	16.9	16.8
1908	12.1	16.1	18.5	24.2	17.1	20.0	17.7
1909	20.7	13.4	14.6	15.6	16.3	19.7	17.1
1910	14.0	12.5	20.6	17.1	16.7	18.0	21.1
1911	19.4	10.2	21.6	21.8	15.8	19.8	16.9
1912	17.9	13.0	17.7	18.1	14.8	20.6	14.0
1913	20.6	13.9	26.5	18.1	14.1	23.2	18.1

TABLE X.—*Death rates per 100,000 population in the 11 States within the death-registration area in 1900 from diseases caused by pregnancy and confinement, 1900 to 1913.*

Year.	Death rate per 100,000 population from diseases caused by pregnancy and confinement.											
	Connecticut.			District of Columbia.			Indiana.			Maine.		
	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.
1900	13.0	5.7	7.3	15.4	5.4	10.0	10.4	4.8	5.6	9.4	3.0	6.3
1901	11.9	4.4	7.5	23.6	10.5	13.0	10.2	5.0	5.2	11.0	4.1	6.9
1902	13.4	5.0	8.4	15.2	5.9	9.3	9.0	3.8	5.2	15.2	6.1	9.1
1903	13.2	4.4	8.7	18.0	9.2	8.8	10.5	5.4	5.1	13.1	3.9	9.2
1904	13.2	4.8	8.4	17.6	8.0	9.7	12.3	5.8	6.4	12.7	5.3	7.4
1905	15.0	5.7	9.3	17.7	6.2	11.5	12.3	6.5	5.7	11.7	5.1	6.5
1906	13.6	5.4	8.2	17.0	7.7	9.3	11.2	4.8	6.3	10.1	2.3	7.7
1907	13.4	6.4	7.0	16.8	7.3	9.5	13.3	7.1	6.3	10.8	4.3	6.6
1908	11.7	4.3	7.4	17.7	4.7	13.1	13.2	6.1	7.0	11.2	4.1	7.1
1909	13.1	4.1	9.0	17.1	7.6	9.5	14.5	7.2	7.3	10.6	4.6	6.0
1910	13.2	5.8	7.4	21.1	12.0	9.0	16.6	8.8	7.8	14.8	6.2	8.6
1911	11.3	5.0	6.3	16.9	7.4	9.5	17.7	10.9	6.8	13.4	3.9	9.5
1912	15.2	5.3	9.9	14.0	4.4	9.6	16.5	8.7	7.8	10.1	2.8	7.3
1913	12.1	4.7	7.4	18.1	6.9	11.2	15.1	8.0	7.2	11.3	3.7	7.7
Annual average, 1900 to 1913	13.1	5.1	8.0	17.6	7.4	10.2	13.1	6.7	6.4	11.8	4.2	7.6

TABLE X.—*Death rates per 100,000 population in the 11 States within the death-registration area in 1900 from diseases caused by pregnancy and confinement, 1900 to 1913*—Continued.

Year.	Death rate per 100,000 population from diseases caused by pregnancy and confinement—Continued.											
	Massachusetts.			Michigan.			New Hampshire.			New Jersey.		
	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.
1900	11.1	3.7	7.4	18.5	8.8	9.7	8.0	2.4	5.6	12.8	4.9	7.9
1901	9.4	3.2	6.2	19.0	9.1	9.9	7.0	3.1	3.9	9.9	3.8	6.1
1902	9.5	3.1	6.4	18.1	7.7	10.4	6.7	2.6	4.1	11.0	4.8	6.2
1903	11.7	4.0	7.7	16.7	7.4	9.3	10.5	3.8	6.7	11.5	4.6	6.9
1904	13.3	4.5	8.8	19.8	8.6	11.2	9.1	3.3	5.7	12.7	6.3	6.4
1905	11.9	4.0	7.9	14.8	6.2	8.6	12.6	3.3	9.3	13.3	6.2	7.0
1906	12.5	3.9	8.5	16.3	6.4	9.9	14.9	5.0	9.9	14.6	6.2	8.3
1907	12.8	4.3	8.4	15.7	6.4	9.3	10.6	3.1	7.5	13.1	5.2	7.8
1908	11.0	4.0	6.9	16.9	6.9	10.0	10.1	2.3	7.7	14.5	7.1	7.5
1909	14.6	5.1	9.4	15.0	6.9	8.2	13.1	4.4	8.6	12.7	5.7	7.0
1910	12.2	4.9	7.3	16.8	7.0	9.9	12.1	4.2	7.9	15.5	7.5	8.1
1911	14.8	6.1	8.7	17.5	8.5	9.0	13.6	4.2	9.5	16.1	7.7	8.4
1912	13.1	5.3	7.8	14.7	6.2	8.5	15.2	5.1	10.1	15.2	6.1	9.2
1913	14.4	5.3	9.1	19.7	9.3	10.4	13.5	4.1	9.4	16.2	7.8	8.4
Annual average, 1900 to 1913	12.4	4.4	7.9	17.1	7.5	9.6	11.2	3.7	7.6	13.7	6.1	7.6

Year.	New York.			Rhode Island.			Vermont.		
	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.	Total.	Puerperal septicemia.	All other.
1900	14.1	6.5	7.6	20.8	8.4	12.4	13.4	4.9	8.4
1901	15.1	6.2	8.9	18.9	6.8	12.1	9.6	2.9	6.7
1902	13.7	6.0	7.7	15.8	7.1	8.7	11.3	3.8	7.5
1903	14.0	6.0	8.0	13.5	5.9	7.6	14.7	3.5	11.2
1904	16.0	7.3	8.7	20.6	10.6	10.0	16.9	5.4	11.5
1905	16.9	7.8	9.1	20.8	8.9	11.8	18.9	4.3	14.6
1906	15.9	7.0	9.0	17.8	6.9	10.9	15.9	4.0	12.0
1907	17.1	7.7	9.4	19.5	8.1	11.4	27.0	7.1	19.9
1908	15.7	7.2	8.5	16.7	6.0	10.8	18.9	6.2	12.7
1909	14.9	6.3	8.7	15.4	7.3	8.1	18.9	9.0	9.9
1910	15.1	6.7	8.4	15.0	5.0	10.1	17.1	6.2	10.9
1911	15.0	6.6	8.4	15.9	5.2	10.8	13.7	4.5	9.2
1912	13.5	6.0	7.6	14.1	5.1	9.0	13.7	2.2	11.4
1913	14.0	6.2	7.8	12.6	4.0	8.6	15.3	4.7	10.6
Annual average, 1900 to 1913	15.1	6.7	8.4	16.8	6.7	10.1	16.1	4.9	11.2

TABLE XI.—*Deaths and death rates per 100,000 population in the death-registration area from diseases caused by pregnancy and confinement, by color of decedent, 1910 to 1913.*

Year.	Deaths from diseases caused by pregnancy and confinement.											
	Number.						Rate per 100,000 population.					
	Total.		Puerperal septicemia.		All other.		Total.		Puerperal septicemia.		All other.	
	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.	White.	Colored.
1910	7,902	553	3,609	283	4,293	270	15.3	25.6	7.0	13.1	8.3	12.5
1911	8,783	673	4,038	338	4,745	335	15.5	26.8	7.1	13.5	8.4	13.3
1912	8,365	670	3,580	325	4,785	345	14.5	26.0	6.2	12.6	8.3	13.4
1913	9,167	843	4,170	372	4,997	471	15.2	26.1	6.9	11.5	8.3	14.6

TABLE XII.—*Average death rates per 100,000 population in certain countries from diseases caused by pregnancy and confinement, 1900 to 1910.*

Country.	Death rate per 100,000 population from diseases caused by pregnancy and confinement.			Country.	Death rate per 100,000 population from diseases caused by pregnancy and confinement.		
	Total.	Puerperal septicemia.	All other.		Total.	Puerperal septicemia.	All other.
Sweden [1]	6.0	2.4	3.5	Japan [1]	13.3	4.5	8.8
Norway	8.1	4.1	3.9	Australia [5]	14.1	4.7	9.4
Italy	8.9	3.3	5.7	Belgium [3]	14.8	5.8	9.0
France [2]	10.3	4.8	5.5	Scotland [1]	14.8	5.5	9.4
Prussia [3]	10.4	4.7	5.8	United States [6]	14.9	6.5	8.3
England and Wales	11.1	4.7	6.5	Switzerland	15.2	6.4	8.8
New Zealand	12.4	3.1	9.3	Spain [1]	19.6	12.3	7.3
Ireland [4]	12.9	4.5	8.4	Austria	([7])	6.6	([7])
Hungary	13.3	3.6	9.8				

[1] Rates based on figures for 1901 to 1910.
[2] Rates based on figures for 1906 to 1910.
[3] Rates based on figures for 1903 to 1910.
[4] Rates based on figures for 1902 to 1910.
[5] Rates based on figures for 1907 to 1910.
[6] Rates based on figures for death-registration area which increased from year to year; in 1900 it comprised 40.5 per cent of the total population of the United States and in 1910, 58.3 per cent.
[7] Figures not available.

TABLE XIII.—*Average death rates per 1,000 live births in certain foreign countries from diseases caused by pregnancy and confinement, 1900 to 1910.*

Country.	Death rate per 1,000 live births from diseases caused by pregnancy and confinement.			Country.	Death rate per 1,000 live births from diseases caused by pregnancy and confinement.		
	Total.	Puerperal septicemia.	All other.		Total.	Puerperal septicemia.	All other.
Sweden [1]	2.3	0.9	1.4	France [3]	5.2	2.4	2.8
Italy	2.7	1.0	1.7	Scotland [1]	5.2	1.9	3.3
Norway	2.9	1.5	1.4	Australia [4]	5.3	1.8	3.5
Prussia [2]	3.2	1.4	1.8	Ireland [5]	5.5	1.9	3.6
Hungary	3.6	1.0	2.6	Switzerland	5.6	2.4	3.3
England and Wales	4.1	1.7	2.4	Spain [1]	5.7	3.6	2.1
Japan [1]	4.1	1.4	2.7	Belgium [2]	5.8	2.3	3.5
New Zealand	4.6	1.2	3.5	Austria	([6])	1.9	([6])

[1] Rates based on figures for 1901 to 1910.
[2] Rates based on figures for 1903 to 1910.
[3] Rates based on figures for 1906 to 1910.
[4] Rates based on figures for 1907 to 1910.
[5] Rates based on figures for 1902 to 1910.
[6] Figures not available.

TABLE XIV.—*Deaths in certain countries from diseases caused by pregnancy and confinement and number and per cent of such deaths from puerperal septicemia, 1900 to 1910.*

Country.	Deaths from diseases caused by pregnancy and confinement.			Country.	Deaths from diseases caused by pregnancy and confinement.		
	Total.	Puerperal septicemia.			Total.	Puerperal septicemia.	
		Number.	Per cent.			Number.	Per cent.
Sweden [1]	3,179	1,294	40.7	Hungary	29,273	7,824	26.7
Norway	2,032	1,041	51.2	Japan [1]	63,908	21,494	33.6
Italy	32,651	11,901	36.4	Australia [5]	2,388	800	33.5
France [2]	20,217	9,424	46.6	Belgium [3]	8,588	3,392	39.5
Prussia [3]	31,680	14,151	44.7	Scotland [1]	6,839	2,522	36.9
England and Wales	41,691	17,433	41.8	United States [6]	63,969	28,176	44.0
New Zealand	1,190	300	25.2	Switzerland	5,897	2,485	42.1
Ireland [4]	5,109	1,792	35.1	Spain [1]	37,504	23,557	62.8

[1] Figures for 1901 to 1910.
[2] Figures for 1906 to 1910.
[3] Figures for 1903 to 1910.
[4] Figures for 1902 to 1910.
[5] Figures for 1907 to 1910.
[6] Figures for death-registration area which increased from year to year; in 1900 it comprised 40.5 per cent of the total population of the United States and in 1910, 58.3 per cent.

COMMENT ON SOURCES OF STATISTICS FOR FOREIGN COUNTRIES.

The following paragraphs present, by countries, the sources of the figures subsequent to 1910 in Table XV for foreign countries and also notes on certain of these figures which call for comment or explanation. Unless otherwise specified the figures for all countries for the years 1900 to 1910, inclusive, are taken from the Statistique Internationale du Mouvement de la Population d'après les Registres de l'Etat Civil, of the Bureau de la statistique générale de la France. The figures for 1900 come from the volume published in 1907; those for 1901 to 1910 from that published in 1913.

These foreign sources were used only for the figures in columns 1, 3, 4, 9, and 13, from which the figures in columns 2, 5, 6, 7, 8, 10, 11, 12, 14, 15, and 16 were computed. Blank spaces indicate that statistics were not available. Similarly, where a table begins with data for a year subsequent to 1900, it indicates that the figures for the earlier years were not available, unless otherwise noted.

Australia (p. 60).—Bureau of census and statistics. Population and vital statistics. Bulletins 29 and 30. 1911–1912.

Austria (p. 60).—Statistisches Centralcommission. Österreichisches statistisches Handbuch für die im Reichsrathe vertretenen Königreiche und Länder. Nebst einem Anhange für die gemeinsamen Angelegenheiten der österreichischungarischen Monarchie. Hrsg. von der statistischen Centralcommission. XXXI Jahrgang. 1911.

The statistics for Austria give the deaths from puerperal septicemia only. The figures for deaths from other diseases of pregnancy and confinement were not available.

The population for 1911 could not be secured from official publications, and was therefore estimated. In making this estimate, one-tenth of the increase from 1900 to 1910 was added to the figure for 1910.

Belgium (p. 60).—Ministère de l'intérieur et de l'instruction publique. Annuaire statistique de la Belgique. 1912–13.

The population is that estimated as of December 31 of each year.

Belgium classifies stillbirths as "mort-nés et autres enfants présentés sans vie."

England and Wales (p. 61).—74th–77th annual reports of the registrar general of births, deaths, and marriages in England and Wales, 1911 to 1914.

Several points should be noted in the figures for England and Wales.

I. The registrar general's reports, prior to 1911, grouped deaths from diseases of pregnancy and confinement into the two large groups "puerperal septic diseases" and "diseases of pregnancy and childbirth (not septic)," and included phlegmasia alba dolens in puerperal septic diseases. For the years 1900 to 1910 the figures used are those given by the Statistique Internationale. The deaths from phlegmasia alba dolens have apparently been subtracted from puerperal septic diseases and have been added to the other group, thus making the classification conform more nearly to the international nomenclature. Therefore, while the figures for "deaths from all diseases caused by pregnancy and confinement" will agree with the official English figures, those for the two other groups, prior to 1911, will not.

II. As the registrar general's report for 1914 gives a table of deaths for the years 1900 to 1914 according to the detailed list of causes of death in use prior to 1911, this table has been used as the source for the figures for England and Wales after 1910, so that the statistics after 1910 can be compared with those of earlier years.

The number of deaths from puerperal septicemia for the years after 1910 is slightly lower when the deaths are classified according to the International Classification than when they are classified according to the older method, as given in table for England and Wales. The deaths from other diseases of pregnancy and confinement are, of course, correspondingly higher. This difference can be seen from the following:

Number of deaths from puerperal septicemia.

Year.	According to the International Classification.	According to the classification in use prior to 1911.
1911	1,262	1,267
1912	1,216	1,223
1913	1,108	1,119
1914	1,365	1,372

III. The International Classification was not used in England until 1911, and deaths from puerperal nephritis and albuminuria were not distinguished as puerperal until after 1910. For England and Wales, therefore, the figures are presented for 1911 to 1914, inclusive, in two ways: (*a*) According to use in England prior to 1911, excluding deaths from puerperal nephritis and albuminuria; and (*b*) including deaths from puerperal nephritis and albuminuria.

The number of these deaths was as follows:

Deaths from puerperal nephritis and albuminuria.

Year:	
1911	177
1912	174
1913	221
1914	198

Hungary (p. 61).—Statisztikai hivatal. Magyar statisztikai evkönyv. 1911.

The figures given for Hungary include those for Fiume and Croatia-Slavonia.

Ireland (p. 62).—51st detailed annual report of the registrar general of marriages, births, and deaths in Ireland in 1914.

I. The registrar general's reports for Ireland, up through 1914, classify deaths from diseases of pregnancy and confinement into two large groups—puerperal septic diseases and diseases of pregnancy and childbirth (not septic), and include phlegmasia alba dolens in puerperal septic diseases. This was the method used in England and Wales prior to 1911. See note on England and Wales.

In the figures for Ireland, given by the Statistique Internationale, apparently no correction has been made as in the case of England and Wales, but in the table here given the figures have been corrected to make them comparable with those for England and Wales and for other countries. To make this correction the deaths from phlegmasia alba dolens were subtracted from deaths from puerperal septic diseases and added to the other group. Thus while the figures for "deaths from all diseases of pregnancy and confinement" will agree with the official Irish figures and with those given in the Statistique Internationale, those for the other two groups will not.

II. The figures for 1900 and for 1901 are not given because in those years the registrar general's reports did not include under puerperal septic diseases either pyemia or septicemia.

Italy (p. 62).—Direzione generale della statistica. Statistica delle cause di morte. 1911–1913.

Movimento de la popolazione. 1913.

Only columns 1, 3, and 4 for 1900 to 1910 were taken from the Statistique Internationale. The above original Italian sources were used, as in the Statistique Internationale the deaths from "other diseases of pregnancy and confinement" and the deaths from "noncancerous tumors and other diseases of the female genital organs" were added together, for several years. (The figures here given were probably not available when the Statistique Internationale was published.)

Japan (p. 63).—Bureau de la statistique générale. Mouvement de la population de l'empire du Japon for 1911 and 1912.

The population is that estimated as of December 31 of each year.

New Zealand (p. 63).—Registrar general's office. Statistics of the Dominion of New Zealand. 1911–1914.

Norway (p. 63).—Statistiske centralbureau. Statistisk aarbok for kongeriget norge. 1914.

The population for 1911 and 1912 is that estimated as of December 31.

Scotland (p. 64).—57th–60th annual reports of the registrar general for Scotland. 1911–1914.

The registrar general's reports for Scotland prior to 1911, like those of England and Wales and Ireland, included phlegmasia alba dolens under puerperal septic diseases. As in the case of Ireland, the figures given by the Statistique Internationale have apparently not been corrected. However, in the table here given the figures have been corrected by the method described above in the comment on the statistics for Ireland.

Sweden (p. 65).—Statistiska centralbyrån. Statistisk årsbok för Sverige. 1915.

The population is that estimated as of December 31 of each year.

Switzerland (p. 65).—Statistisches Bureau. Statistisches Jahrbuch der Schweiz. 1914.

[illegible]

[illegible]	[illegible]	Births.	[illegible]	Total.				Puerperal septicemia.				All other.			
				Number.	Rate.			Number.	Rate.			Number.	Rate.		
					Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.		Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.		Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	435	10.7		[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]		[illegible]		[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]		[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	2.1	2.1				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	2.1	2.1				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	2.1				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	2.1				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	[illegible]	[illegible]	[illegible]				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				1,822 (?)	6.5	1.9	1.9				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	6.2	1.8	1.8				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	6.2	1.9	1.9				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]				[illegible]	6.0	1.9	1.9				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.2	6.4							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.8 (?)							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.6 (?)							
1913 (?)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.0 (?)	6.3 (?)	482	6.2	2.2	2.2	773	11.1	3.8	4.0
1914 (?)	[illegible]	[illegible]	[illegible]	[illegible]	1,170 (?)	[illegible]	6.9 (?)	6.1 (?)	445	6.3	2.2	2.3	734	10.4	3.7	3.8

1905	7,161,000	196,029	187,437	8,592	995	13.9	5.1	5.3	389	5.4	2.0	2.1	606	8.5	3.1	3.2
1906	7,239,000	194,775	186,271	8,504	1,029	14.2	5.3	5.5	403	5.6	2.1	2.2	626	8.6	3.2	3.4
1907	7,318,000	193,449	185,138	8,311	1,053	14.4	5.4	5.7	407	5.6	2.1	2.2	646	8.8	3.3	3.5
1908	7,386,000	192,397	183,834	8,563	1,121	15.2	5.8	6.1	466	6.3	2.4	2.5	655	8.9	3.4	3.6
1909	7,452,000	184,700	176,431	8,269	1,039	13.9	5.6	5.9	439	5.9	2.4	2.5	600	8.1	3.2	3.4
1910	7,424,000	184,421	176,413	8,008	967	13.0	5.2	5.5	411	5.5	2.2	2.3	556	7.5	3.0	3.2
1911	7,490,000	179,359	171,802	7,557	1,024	13.7	5.7	6.0	398	5.3	2.2	2.3	626	8.4	3.5	3.6
1912	7,571,000	178,976	171,187	7,789	1,122	14.8	6.3	6.6	476	6.3	2.7	2.8	646	8.5	3.6	3.8
England and Wales:																
1900	32,249,000	.....	927,062	.....	4,455	13.8	.....	4.8	1,941	6.0	.....	2.1	2,514	7.8	.....	2.7
1901	32,612,000	.....	929,807	.....	4,394	13.5	.....	4.7	2,005	6.1	.....	2.2	2,389	7.3	.....	2.6
1902	32,951,000	.....	940,509	.....	4,205	12.8	.....	4.5	1,908	5.8	.....	2.0	2,297	7.0	.....	2.4
1903	33,293,000	.....	948,271	.....	3,857	11.6	.....	4.1	1,581	4.7	.....	1.7	2,276	6.8	.....	2.4
1904	33,639,000	.....	945,389	.....	3,667	10.9	.....	3.9	1,560	4.6	.....	1.7	2,107	6.3	.....	2.2
1905	33,989,000	.....	929,293	.....	3,905	11.5	.....	4.2	1,631	4.8	.....	1.8	2,274	6.7	.....	2.4
1906	34,342,000	.....	935,081	.....	3,757	10.9	.....	4.0	1,538	4.5	.....	1.6	2,219	6.5	.....	2.4
1907	34,699,000	.....	918,042	.....	3,520	10.1	.....	3.8	1,381	4.0	.....	1.5	2,139	6.2	.....	2.3
1908	35,059,000	.....	940,383	.....	3,361	9.6	.....	3.6	1,312	3.7	.....	1.4	2,049	5.8	.....	2.2
1909	35,424,000	.....	914,472	.....	3,379	9.5	.....	3.7	1,357	3.8	.....	1.5	2,022	5.7	.....	2.2
1910	35,792,000	.....	896,962	.....	3,191	8.9	.....	3.6	1,219	3.4	.....	1.4	1,972	5.5	.....	2.2
1911a [1]	36,190,000	.....	881,138	.....	3,236	8.9	.....	3.7	1,267	3.5	.....	1.4	1,969	5.4	.....	2.2
1911b	.....	.....	.....	.....	3,413	9.4	.....	3.9	.....	.....	.....	.....	2,146	5.9	.....	2.4
1912a	36,382,000	.....	872,737	.....	3,299	9.1	.....	3.8	1,223	3.4	.....	1.4	2,076	5.7	.....	2.4
1912b	.....	.....	.....	.....	3,473	9.5	.....	4.0	.....	.....	.....	.....	2,250	6.2	.....	2.6
1913a	36,606,000	.....	881,890	.....	3,271	8.9	.....	3.7	1,119	3.1	.....	1.3	2,152	5.9	.....	2.4
1913b	.....	.....	.....	.....	3,492	9.5	.....	4.0	.....	.....	.....	.....	2,373	6.5	.....	2.7
1914a	36,961,000	.....	879,096	.....	3,469	9.4	.....	3.9	1,372	3.7	.....	1.6	2,097	5.7	.....	2.4
1914b	.....	.....	.....	.....	3,667	9.9	.....	4.2	.....	.....	.....	.....	2,285	6.2	.....	2.6
France:																
1906	39,282,000	844,173	806,847	37,326	4,067	10.4	4.8	5.0	1,873	4.8	2.2	2.3	2,104	5.6	2.6	2.7
1907	39,279,000	809,446	772,681	36,765	4,499	11.5	5.6	5.8	2,117	5.4	2.6	2.7	2,382	6.1	2.9	3.1
1908	39,368,000	829,714	792,178	37,536	3,982	10.1	4.8	5.0	1,855	4.7	2.2	2.3	2,127	5.4	2.6	2.7
1909	39,421,000	805,641	769,565	36,076	4,097	10.4	5.1	5.3	1,900	4.8	2.4	2.5	2,197	5.6	2.7	2.9
1910	39,528,000	810,399	774,390	36,009	3,572	9.0	4.4	4.6	1,679	4.2	2.1	2.2	1,893	4.8	2.3	2.4
Hungary:																
1900	19,144,000	768,673	752,718	15,955	2,606	13.6	3.4	3.5	636	3.3	.8	.8	1,970	10.3	2.6	2.6
1901	19,342,000	747,224	731,721	15,503	2,789	14.4	3.7	3.8	687	3.6	.9	.9	2,102	10.9	2.8	2.9
1902	19,513,000	775,641	759,739	15,902	2,665	13.7	3.4	3.5	622	3.2	.8	.8	2,043	10.5	2.6	2.7
1903	19,669,000	740,405	725,239	15,166	2,562	13.0	3.5	3.5	571	2.9	.8	.8	1,991	10.1	2.7	2.7
1904	19,832,000	755,526	740,799	14,727	2,678	13.5	3.5	3.6	654	3.3	.9	.9	2,024	10.2	2.7	2.7
1905	19,969,000	734,335	720,532	13,803	2,694	13.5	3.7	3.7	689	3.5	.9	1.0	2,005	10.0	2.7	2.8
1906	20,099,000	748,060	733,953	14,107	2,490	12.4	3.3	3.4	602	3.0	.8	.8	1,888	9.4	2.5	2.6
1907	20,260,000	755,653	740,867	14,786	2,552	12.6	3.4	3.4	720	3.6	1.0	1.0	1,832	9.0	2.4	2.5

[1] See explanatory note on p. 58.

TABLE XV.—*Population, births, deaths, and death rates per 100,000 population, per 1,000 births, and per 1,000 live births from diseases caused by pregnancy and confinement in certain foreign countries for specified years*—Continued.

Country and year.	Population July 1 each year (estimated).	Births.			Deaths from diseases caused by pregnancy and confinement.										
					Total.				Puerperal septicemia.				All other.			
						Rate.				Rate.				Rate.		
		Total.	Live births.	Still-births.	Number.	Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Hungary—Continued.																
1908	20,426,000	771,126	755,888	15,238	2,892	14.2	3.8	3.8	899	4.4	1.2	1.2	2,003	9.8	2.6	2.6
1909	20,606,000	792,354	776,395	15,959	2,839	13.8	3.6	3.7	961	4.7	1.2	1.2	1,878	9.1	2.4	2.4
1910	20,793,000	758,566	742,899	15,667	2,506	12.1	3.3	3.4	793	3.8	1.0	1.1	1,713	8.2	2.3	2.3
1911	20,958,000	747,916	732,767	15,149	2,443	11.7	3.3	3.3	869	4.1	1.2	1.2	1,574	7.5	2.1	2.1
Ireland:																
1902	4,434,000	.....	101,863	.....	635	14.3	.....	6.2	214	4.8	.....	2.1	421	9.5	.....	4.1
1903	4,416,000	.....	101,831	.....	573	13.0	.....	5.6	222	5.0	.....	2.2	351	7.9	.....	3.4
1904	4,405,000	.....	103,811	.....	583	13.2	.....	5.6	206	4.7	.....	2.0	377	8.6	.....	3.6
1905	4,396,000	.....	102,832	.....	573	13.0	.....	5.6	217	4.9	.....	2.1	356	8.1	.....	3.5
1906	4,393,000	.....	103,536	.....	607	13.8	.....	5.9	218	5.0	.....	2.1	389	8.9	.....	3.8
1907	4,383,000	.....	101,742	.....	505	11.5	.....	5.0	152	3.5	.....	1.5	353	8.1	.....	3.5
1908	4,379,000	.....	102,039	.....	530	12.1	.....	5.2	178	4.1	.....	1.7	352	8.0	.....	3.4
1909	4,380,000	.....	102,759	.....	561	12.8	.....	5.5	207	4.7	.....	2.0	354	8.1	.....	3.4
1910	4,378,000	.....	101,963	.....	542	12.4	.....	5.3	178	4.1	.....	1.7	364	8.3	.....	3.6
1911	4,384,000	.....	101,758	.....	514	11.7	.....	5.1	165	3.8	.....	1.6	349	8.0	.....	3.4
1912	4,385,000	.....	101,035	.....	549	12.5	.....	5.4	187	4.3	.....	1.9	362	8.3	.....	3.6
1913	4,379,000	.....	100,094	.....	527	12.0	.....	5.3	163	3.7	.....	1.6	364	8.3	.....	3.6
1914	4,381,000	.....	98,806	.....	497	11.3	.....	5.0	182	4.2	.....	1.8	315	7.2	.....	3.2
Italy:																
1900	32,346,000	1,113,055	1,067,376	45,679	3,034	9.4	2.7	2.8	1,033	3.2	.9	1.0	2,001	6.2	1.8	1.9
1901	32,533,000	1,104,017	1,057,763	46,254	2,767	8.5	2.5	2.6	994	3.1	.9	.9	1,773	5.4	1.6	1.7
1902	32,700,000	1,141,749	1,093,074	48,675	2,807	8.6	2.5	2.6	1,037	3.2	.9	.9	1,770	5.4	1.6	1.6
1903	32,840,000	1,088,797	1,042,090	46,707	2,771	8.4	2.5	2.7	1,112	3.4	1.0	1.1	1,659	5.1	1.5	1.6
1904	33,016,000	1,164,552	1,085,431	49,121	2,981	9.0	2.6	2.7	1,082	3.3	1.0	1.0	1,899	5.8	1.7	1.7

1905	33,193,000	1,133,979	1,084,518	49,461	3,198	9.6	2.8	2.9	977	2.9	.9	.9	2,221	6.7	2.0	2.0
1906	33,325,000	1,119,131	1,070,978	48,153	2,791	8.4	2.5	2.6	1,021	3.1	.9	1.0	1,770	5.3	1.6	1.7
1907	33,515,000	1,110,356	1,062,333	48,023	3,074	9.2	2.8	2.9	1,147	3.4	1.0	1.1	1,927	5.7	1.7	1.8
1908	33,827,000	1,190,278	1,138,813	51,465	3,315	9.8	2.8	2.9	1,245	3.7	1.0	1.1	2,070	6.1	1.7	1.8
1909	34,077,000	1,166,121	1,115,831	50,290	3,127	9.2	2.7	2.8	1,242	3.6	1.1	1.1	1,885	5.5	1.6	1.7
1910	34,377,000	1,194,747	1,144,410	50,337	2,786	8.1	2.3	2.4	1,011	2.9	.8	.9	1,775	5.2	1.5	1.6
1911	34,689,000	1,141,036	1,093,545	47,491	2,612	7.5	2.3	2.4	929	2.7	.8	.8	1,683	4.9	1.5	1.5
1912	35,026,000	1,181,553	1,133,985	47,568	2,743	7.8	2.3	2.4	899	2.6	.8	.8	1,844	5.3	1.6	1.6
1913	35,418,000	1,169,353	1,122,482	46,871	2,811	7.9	2.4	2.5	1,037	2.9	.9	.9	1,774	5.0	1.5	1.6
Japan:																
1901	45,437,000	1,657,080	1,501,591	155,489	6,671	14.7	4.0	4.4	1,885	4.1	1.1	1.3	4,786	10.5	2.9	3.2
1902	46,022,000	1,668,543	1,510,835	157,708	6,556	14.2	3.9	4.3	1,983	4.3	1.2	1.3	4,573	9.9	2.7	3.0
1903	46,733,000	1,643,736	1,489,816	153,920	6,071	13.0	3.7	4.1	2,028	4.3	1.2	1.4	4,043	8.7	2.5	2.7
1904	47,220,000	1,587,429	1,440,371	147,058	5,742	12.2	3.6	4.0	1,810	3.8	1.1	1.3	3,932	8.3	2.5	2.7
1905	47,678,000	1,594,862	1,452,770	142,092	6,185	13.0	3.9	4.3	1,878	3.9	1.2	1.3	4,307	9.0	2.7	3.0
1906	48,165,000	1,544,026	1,394,295	149,731	6,237	12.9	4.0	4.5	1,915	4.0	1.2	1.4	4,322	9.0	2.8	3.1
1907	48,820,000	1,773,286	1,614,472	158,814	6,728	13.8	3.8	4.2	2,294	4.7	1.3	1.4	4,434	9.1	2.5	2.7
1908	49,589,000	1,825,491	1,662,815	162,676	7,091	14.3	3.9	4.3	2,570	5.2	1.4	1 5	4,521	9.1	2.5	2.7
1909	50,254,000	1,855,426	1,693,850	161,576	6,399	12.7	3.4	3.8	2,575	5.1	1.4	1.5	3,824	7.6	2.1	2.3
1910	50,908,000	1,870,249	1,712,857	157,392	6,228	12.2	3.3	3.6	2,556	5.0	1.4	1.5	3,672	7.2	2.0	2.1
1911 [1]	51,435,000	1,903,122	1,747,803	155,319	6,192	12.0	3.3	3.5	2,512	4.9	1.3	1.4	3,680	7.2	1.9	2.1
1912 [1]	52,167,000	1,885,219	1,737,674	147,545	5,770	11.1	3.1	3.3	2,357	4.5	1.3	1.4	3,413	6.5	1.8	2.0
New Zealand:																
1900	764,000	.....	19,546	.....	75	9.8	.....	3.8	24	3.1	.....	1.2	51	6.7	.....	2.6
1901	778,000	.....	20,491	.....	90	11.6	.....	4.4	20	2.6	.....	1.0	70	9.0	.....	3.4
1902	798,000	.....	20,655	.....	110	13.8	.....	5.3	25	3.1	.....	1.2	85	10.7	.....	4.1
1903	820,000	.....	21,829	.....	128	15.6	.....	5.9	28	3.4	.....	1.3	100	12.2	.....	4.6
1904	845,000	.....	22,766	.....	106	12.5	.....	4.7	21	2.5	.....	.9	85	10.1	.....	3.7
1905	870,000	.....	23,682	.....	100	11.5	.....	4.2	21	2.4	.....	.9	79	9.1	.....	3.3
1906	896,000	.....	24,252	.....	94	10.5	.....	3.9	18	2.0	.....	.7	76	8.5	.....	3.1
1907	919,000	.....	25,094	.....	116	12.6	.....	4.6	29	3.2	.....	1.2	87	9.5	.....	3.5
1908	945,000	.....	25,940	.....	119	12.6	.....	4.6	46	4.9	.....	1.8	73	7.7	.....	2.8
1909	972,000	.....	26,524	.....	135	13.9	.....	5.1	33	3.4	.....	1.2	102	10.5	.....	3.8
1910	993,000	.....	25,984	.....	117	11.8	.....	4.5	35	3.5	.....	1.3	82	8.3	.....	3.2
1911	1,015,000	.....	26,354	.....	114	11.2	.....	4.3	27	2.7	.....	1.0	87	8.6	.....	3.3
1912	1,039,000	.....	27,508	.....	100	9.6	.....	3.6	19	1.8	.....	.7	81	7.8	.....	2.9
1913	1,069,000	.....	27,935	.....	100	9.4	.....	3.6	29	2.7	.....	1.0	71	6.6	.....	2.5
1914	1,090,000	.....	28,338	.....	118	10.8	.....	4.2	35	3.2	.....	1.2	83	7.6	.....	2.9
Norway:																
1900	2,200,000	67,765	66,149	1,616	184	8.4	2.7	2.8	111	5.0	1.6	1.7	73	3.3	1.1	1.1
1901	2,235,000	67,935	66,207	1,728	219	9.8	3.2	3.3	101	4.5	1.5	1.5	118	5.3	1.7	1.8
1902	2,255,000	66,854	65,262	1,592	207	9.2	3.1	3.2	109	4.8	1.6	1.7	98	4.3	1.5	1.5
1903	2,265,000	66,797	65,155	1,642	205	9.1	3.1	3.1	113	5.0	1.7	1.7	92	4.1	1.4	1.4
1904	2,274,000	65,533	63,955	1,578	199	8.8	3.0	3.1	106	4.7	1.6	1.7	93	4.1	1.4	1.5

[1] Figures for Dec. 31.

TABLE XV.—*Population, births, deaths, and death rates per 100,000 population, per 1,000 births, and per 1,000 live births from diseases caused by pregnancy and confinement in certain foreign countries for specified years*—Continued.

Country and year.	Population July 1 each year (estimated).	Births.			Deaths from diseases caused by pregnancy and confinement.											
					Total.				Puerperal septicemia.				All other.			
						Rate.				Rate.				Rate.		
		Total.	Live births.	Still-births.	Number.	Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.	Number.	Per 100,000 population.	Per 1,000 births.	Per 1,000 live births.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Norway—Continued.																
1905	2,284,000	64,158	62,698	1,460	163	7.1	2.5	2.6	75	3.3	1.2	1.2	88	3.9	1.4	1.4
1906	2,294,000	62,743	61,316	1,427	152	6.6	2.4	2.5	78	3.4	1.2	1.3	74	3.2	1.2	1.2
1907	2,303,000	62,151	60,722	1,429	168	7.3	2.7	2.8	92	4.0	1.5	1.5	76	3.3	1.2	1.3
1908	2,318,000	62,286	60,866	1,420	183	7.9	2.9	3.0	98	4.2	1.6	1.6	85	3.7	1.4	1.4
1909	2,338,000	62,846	61,407	1,439	187	8.0	3.0	3.0	81	3.5	1.3	1.3	106	4.5	1.7	1.7
1910	2,353,000	62,890	61,461	1,429	165	7.0	2.6	2.7	77	3.3	1.2	1.3	88	3.7	1.4	1.4
1911	2,415,000	62,867	61,468	1,399	.....	.....	.....	.....	87	3.6	1.4	1.4	.....	.....	.....	.....
1912	2,439,000	62,581	61,151	1,430	.....	.....	.....	.....	90	3.7	1.4	1.5	.....	.....	.....	.....
Prussia:																
1900	34,254,000	1,275,712	1,235,719	39,993	4,074	11.9	3.2	3.3	.....	.....	.....	.....	.....	.....	.....	.....
1901	34,802,000	1,301,092	1,260,379	40,713	3,992	11.5	3.1	3.2	.....	.....	.....	.....	.....	.....	.....	.....
1902	35,366,000	1,295,914	1,255,686	40,228	4,080	11.5	3.1	3.2	.....	.....	.....	.....	.....	.....	.....	.....
1903	35,930,000	1,274,666	1,235,213	39,453	4,120	11.5	3.2	3.3	1,986	5.5	1.6	1.6	2,134	5.9	1.7	1.7
1904	36,494,000	1,304,697	1,264,534	40,163	4,395	12.0	3.4	3.5	2,103	5.8	1.6	1.7	2,292	6.3	1.8	1.8
1905	37,058,000	1,279,992	1,241,620	38,372	3,963	10.7	3.1	3.2	1,789	4.8	1.4	1.4	2,174	5.9	1.7	1.8
1906	37,628,000	1,308,912	1,269,611	39,301	3,722	9.9	2.8	2.9	1,456	3.9	1.1	1.1	2,266	6.0	1.7	1.8
1907	38,203,000	1,298,291	1,259,636	38,655	3,771	9.9	2.9	3.0	1,529	4.0	1.2	1.2	2,242	5.9	1.7	1.8
1908	38,777,000	1,308,283	1,269,399	38,884	3,899	10.1	3.0	3.1	1,744	4.5	1.3	1.4	2,155	5.6	1.6	1.7
1909	39,352,000	1,287,030	1,249,040	37,990	3,913	9.9	3.0	3.1	1,772	4.5	1.4	1.4	2,141	5.4	1.7	1.7
1910	39,926,000	1,256,613	1,219,447	37,166	3,897	9.8	3.1	3.2	1,772	4.4	1.4	1.5	2,125	5.3	1.7	1.7
Scotland:																
1901	4,479,000	.....	132,192	.....	627	14.0	.....	4.7	280	6.3	.....	2.1	347	7.7	.....	2.6
1902	4,507,000	.....	132,267	.....	682	15.1	.....	5.2	307	6.8	.....	2.3	375	8.3	.....	2.8
1903	4,535,000	.....	133,525	.....	709	15.6	.....	5.3	291	6.4	.....	2.2	418	9.2	.....	3.1
1904	4,564,000	.....	132,603	.....	615	13.5	.....	4.6	241	5.3	.....	1.8	374	8.2	.....	2.8
1905	4,592,000	.....	131,410	.....	718	15.6	.....	5.5	248	5.4	.....	1.9	470	10.2	.....	3.6
1906	4,621,000	.....	132,005	.....	717	15.5	.....	5.4	263	5.7	.....	2.0	454	9.8	.....	3.4
1907	4,650,000	.....	128,840	.....	686	14.8	.....	5.3	228	4.9	.....	1.8	458	9.8	.....	3.6

1908	4,679,000	.....	131,362	.....	676	14.4	.....	5.1	231	4.9	.....	1.8	445	9.5	.....	3.4
1909	4,708,000	.....	128,669	.....	699	14.8	.....	5.4	212	4.5	.....	1.6	487	10.3	.....	3.8
1910	4,737,000	.....	124,059	.....	710	15.0	.....	5.7	221	4.7	.....	1.8	489	10.3	.....	3.9
1911	4,751,000	.....	121,850	.....	699	14.7	.....	5.7	173	3.6	.....	1.4	526	11.1	.....	4.3
1912	4,741,000	.....	122,790	.....	675	14.2	.....	5.5	193	4.1	.....	1.6	482	10.2	.....	3.9
1913	4,728,000	.....	120,516	.....	708	15.0	.....	5.9	160	3.4	.....	1.3	548	11.6	.....	4.5
1914	4,747,000	.....	123,934	.....	746	15.7	.....	6.0	229	4.8	.....	1.8	517	10.9	.....	4.2
Spain:																
1901	18,657,000	666,252	650,649	15,603	3,674	19.7	5.5	5.6	2,178	11.7	3.3	3.3	1,496	8.0	2.2	2.3
1902	18,755,000	683,153	666,687	16,466	3,494	18.6	5.1	5.2	2,116	11.3	3.1	3.2	1,378	7.3	2.0	2.1
1903	18,853,000	703,568	685,265	18,303	3,771	20.0	5.4	5.5	2,362	12.5	3.4	3.4	1,409	7.5	2.0	2.1
1904	18,951,000	667,125	649,878	17,247	3,885	20.5	5.8	6.0	2,465	13.0	3.7	3.8	1,420	7.5	2.1	2.2
1905	19,049,000	688,058	670,651	17,407	4,115	21.6	6.0	6.1	2,715	14.3	3.9	4.0	1,400	7.3	2.0	2.1
1906	19,147,000	666,874	650,385	16,489	3,860	20.2	5.8	5.9	2,469	12.9	3.7	3.8	1,391	7.3	2.1	2.1
1907	19,245,000	661,981	646,374	15,607	3,930	20.4	5.9	6.1	2,549	13.2	3.9	3.9	1,381	7.2	2.1	2.1
1908	19,343,000	674,125	657,701	16,424	3,725	19.3	5.5	5.7	2,316	12.0	3.4	3.5	1,409	7.3	2.1	2.1
1909	19,442,000	666,551	650,415	16,136	3,643	18.7	5.5	5.6	2,280	11.7	3.4	3.5	1,363	7.0	2.0	2.1
1910	19,540,000	662,934	646,787	16,147	3,407	17.4	5.1	5.3	2,107	10.8	3.2	3.3	1,300	6.7	2.0	2.0
Sweden:																
1900	5,117,000	141,717	138,139	3,578	.....	.....	.....	.....	121	2.4	.9	.9	.....	.....	.....	.....
1901	5,156,000	142,998	139,370	3,628	315	6.1	2.2	2.3	152	2.9	1.1	1.1	163	3.2	1.1	1.2
1902	5,187,000	140,879	137,364	3,515	306	5.9	2.2	2.2	146	2.8	1.0	1.1	160	3.1	1.1	1.2
1903	5,210,000	137,334	133,896	3,438	305	5.9	2.2	2.3	128	2.5	.9	1.0	177	3.4	1.3	1.3
1904	5,241,000	138,484	134,952	3,532	288	5.5	2.1	2.1	126	2.4	.9	.9	162	3.1	1.2	1.2
1905	5,278,000	138,827	135,409	3,418	333	6.3	2.4	2.5	169	3.2	1.2	1.2	164	3.1	1.2	1.2
1906	5,316,000	140,069	136,620	3,449	325	6.1	2.3	2.4	124	2.3	.9	.9	201	3.8	1.4	1.5
1907	5,357,000	140,330	136,793	3,537	318	5.9	2.3	2.3	110	2.1	.8	.8	208	3.9	1.5	1.5
1908	5,404,000	142,309	138,874	3,435	295	5.5	2.1	2.1	107	2.0	.8	.8	188	3.5	1.3	1.4
1909	5,453,000	142,987	139,505	3,482	349	6.4	2.4	2.5	113	2.1	.8	.8	236	4.3	1.7	1.7
1910	5,499,000	138,976	135,625	3,351	345	6.3	2.5	2.5	119	2.2	.9	.9	226	4.1	1.6	1.7
1911	5,562,000	136,335	132,977	3,358	354	6.4	2.6	2.7	136	2.4	1.0	1.0	218	3.9	1.6	1.6
Switzerland:																
1900	3,302,000	97,695	94,316	3,379	523	15.8	5.4	5.5	193	5.8	2.0	2.0	330	10.0	3.4	3.5
1901	3,341,000	100,635	97,028	3,607	586	17.5	5.8	6.0	250	7.5	2.5	2.6	336	10.1	3.3	3.5
1902	3,385,000	99,993	96,481	3,512	500	14.8	5.0	5.2	196	5.8	2.0	2.0	304	9.0	3.0	3.2
1903	3,429,000	97,119	93,824	3,295	554	16.2	5.7	5.9	237	6.9	2.4	2.5	317	9.2	3.3	3.4
1904	3,472,000	98,300	94,867	3,433	590	17.0	6.0	6.2	257	7.4	2.6	2.7	333	9.6	3.4	3.5
1905	3,516,000	98,057	94,653	3,404	551	15.7	5.6	5.8	253	7.2	2.6	2.7	298	8.5	3.0	3.1
1906	3,560,000	98,971	95,595	3,376	495	13.9	5.0	5.2	191	5.4	1.9	2.0	304	8.5	3.1	3.2
1907	3,604,000	97,696	94,508	3,188	553	15.3	5.7	5.9	261	7.2	2.7	2.8	292	8.1	3.0	3.1
1908	3,647,000	99,468	96,245	3,223	554	15.2	5.6	5.8	227	6.2	2.3	2.4	327	9.0	3.3	3.4
1909	3,691,000	97,296	94,112	3,184	544	14.7	5.6	5.8	238	6.4	2.4	2.5	306	8.3	3.1	3.3
1910	3,735,000	96,669	93,514	3,155	447	12.0	4.6	4.8	182	4.9	1.9	1.9	265	7.1	2.7	2.8
1911	3,781,000	94,185	91,320	2,865	501	13.3	5.3	5.5	245	6.5	2.6	2.7	256	6.8	2.7	2.8
1912	3,831,000	95,171	92,196	2,975	484	12.6	5.1	5.2	218	5.7	2.3	2.4	266	6.9	2.8	2.9

TABLE XVII.—Average death rates per 100,000 population and per 1,000 live births from diseases caused by pregnancy and confinement in certain foreign countries for specified periods of years.

Country and specified period of years.	Death rate from diseases caused by pregnancy and confinement.					
	Total.		Puerperal septicemia.		All other.	
	Per 100,000 population.	Per 1,000 live births.	Per 100,000 population.	Per 1,000 live births.	Per 100,000 population.	Per 1,000 live births.
Australia:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Austria:						
Whole period			[illegible]	[illegible]		
[illegible]			[illegible]	[illegible]		
[illegible]			[illegible]	[illegible]		
[illegible]			[illegible]	[illegible]		
Belgium:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
England and Wales:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
France:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Hungary:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Ireland:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Italy:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Japan:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
New Zealand:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Norway:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Prussia:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Scotland:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Spain:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sweden:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Switzerland:						
Whole period	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

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